THE

CYCLOPAEDIA;

OR,

UNIVERSAL DICTIONARY

OF

Arts, Sciences, and Literature.

BY


WITH THE ASSISTANCE OF

EMINENT PROFESSIONAL GENTLEMEN.

ILLUSTRATED WITH NUMEROUS ENGRAVINGS,

BY THE MOST DISTINGUISHED ARTISTS.

IN THIRTY-NINE VOLUMES.

VOL. XXXVI.

LONDON:

Printed for LONGMAN, HURST, REES, ORME, & BROWN, PATERNOSTER-Row,

F.C. AND J.RIVINGTON, A.STRAHAN, PAYNE AND FOSS, SCATCHERD AND LETTERMAN, J. CUTHELL,

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1819.
TOLERIUM, in Ancient Geography, a town of Italy, in ancient Latium, and one of those which were taken by Coriolanus, according to Plutarch and Steph. Byz. 

TOLESCAPATAM, in Geography, a town of Hindoos, in the Carnatic; 28 miles S.E. of Tanjore.

TOLETUM, Toledo, in Ancient Geography, a town of Hispания Citerior, belonging to the Carpetani, to the S.W. upon the Tagus. According to Silva and other Spanish historians, this city was founded by a confederate body of Jews, who, on their emancipation from captivity, 540 years before the vulgar era, established themselves here, and called the place Toledoth, or Toledath, that is, mother of the people. However this be, Toledo became in process of time a Roman colony. Caesar made it a place of arms, and Augustus rendered it the principal seat of justice for the provinces of Spain in his department. Many ancient remains, such as an aqueduct, a road, &c. have been discovered at Toledo; which fee.

TOLETUS, (de Toledo,) Francis, cardinal, in Biography, was born at Corduba in 1532, and studied at Salamanca, where he took the degree of doctor in theology, and was made professor of philosophy. At the age of twenty-seven years, he entered the society of Jefuits, and in the following year he went to Rome, and read lectures on Aristotle and theology. He acquired great popularity as a preacher, and, in 1562, when he was compared with other preachers, it was said "Toledo teaches, Panigarola pleads, and Lupo moves." He was employed by several popes in various legations, and in 1593 Clement VIII. invested him with the purple, being the first Jefuit who obtained that dignity. He died at Rome in 1596, at the age of sixty-four. Toledo was one of those theologians who were employed by Sixtus V. in revising his bible. Of his various works, we shall only mention his "Sum of Cafes of Con.

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TOLFA, in Geography, a town of the Popedom, in the Patrimonio, in the environs of which are mines of alum and iron, with warm baths, and quarries of alabaster and lapis lazuli, about four miles from the sea-coast; 25 miles N.W. of Rome.

TOLHAR, a town of Hindoos, in Lahore; 18 miles S. of Rotas.

TOLHUES, a town of Gueldeland, on the Rhine; where the French paused that river in the year 1672, and the Hanoverians in 1758; 6 miles W.S.W. of Emmerick.

TOLI, a town of European Turkey, in Macedonia; 85 miles N.W. of Saloniki.

TOLITZIN, a town of Rouflia, in the government of Mogily; 70 miles N. of Mogily.

TOLKEMIT, a town of Prussia, in the province of Ermeland, on the Frich Haf; 12 miles N.E. of Elbing. N. lat. 54° 18'. E. long. 19° 33'.

TOLL, Telonium, a Saxon word, though derived originally from the Latin tollere, to take away, or rather the Greek τολος, tribute, tax. It has two acceptations, denoting, first, a liberty to buy and sell within the bounds of a manor: and, secondly, TOL is also used for a tax or custom paid for passage, or for vending goods in a market, fair, or the like.

This tax originated in the expence attending the construction and preservation of highways, bridges, and canals: and it is evidently just that a traveller, and especially a merchant, who derives advantage from a bridge, a canal, or a causeway,
TOLL

Tollgate, in his own passage, and in more commodiously conveying his merchandise, should contribute to the expence of these useful establishments, by a moderate contribution; and if the state thinks proper to exempt the citizens from paying it, it is under no obligation to gratify strangers in this particular. But a law so just in its origin, frequently degenerates into a great abuse. There are countries where no care is taken of the highways, and where they nevertheless require considerable tolls.

Some records make mention of toll-ter, or thorough toll, which is money paid for passage in or through some highways, or over ferries, bridges, &c. Toll traves, for palling or driving cattle over a private man's ground. And toll-turn, or turn-toll, which is paid at the return of beasts from fairs and markets, though they are not fold.

By the ancient laws, the buyers of corn and cattle in fairs or markets were made to pay toll to the lord of the market, in testimony of the contract there lawfully made in open market, because private contracts were held unlawful.

Some interpret toll a liberty, as well to take as to be free from toll; for that they who are indebted with toll are custom-free.

Of this freedom from toll the city of Coventry boasts an ancient charter, granted them by Lefrick, or Luriche, earl of the Mercians, in Edward the Confessor's time, who, at the importunity of Godiva, his lady, granted this freedom to the city.

Toll-bar, or Stop, on a canal, is a beam for stopping boats at the toll-houses.

Toll-Houses, habitation conducted on the banks of a canal or navigation for the toll-clerks.

TOLLAND, in Geography, a county of America, in

the state of Connecticut, divided into ten townships, and containing 13,779 inhabitants. — Also, a town of the same state and county; 65 miles W.S.W. of Boston, containing 1610 inhabitants. N. lat. 41° 38'. W. long. 72° 26'.

TOLLEIT, a town of Austria; 6 miles S.W. of Erfu-derg.

TOLLEN, a lake of Anterior Pomerania, near Trepto.

TOLLENON, among the Romans, a warlike machine, formed in this manner: one beam was fixed very deep in the earth, and on the top of it another more than half as long, and moveable upon a centre. On one end of this crofs-beam was placed a covering of hurdles or planks, within which a few soldiers were put, and, by pulling down the other end with ropes, these were raised above the walls of a besieged town.

TOLLERON was also an engine for raising water out of a draw-well.

TOLLERSHAM, in Geography, a town of Auffria; 4 miles N.E. of Zwetl.

TOLLES, or TOLLE, names given by some to the tolfs, and by others to the glandular abscesses sometimes affecting the limbs.

TOLLESIO, in Geography, a town of Sweden, in West Gothland; 23 miles E.N.E. of Gothenburg.

TOLLET, Thomas, in Biography, a composer for, and a performer on, the common flute, when it was in its highest favour in England. He published likewise directions for playing on the French flageolet. And, in conjunction with John Linton, whose instrument was the flute, one of King William and queen Mary's band, published a work entitled "A Confort of Muick in Three Parts." A ground composed by Tollet, was much in favour during our own time.

TOLLING a Bell. See Ring.

TOLLIUS, Cornelius, in Biography, a man of learning in the 17th century, was born at Utrechts, and became secretary to Isaac Vossius, by whom he was dismissed under a charge of unfaithfulness. He was afterwards professor of eloquence and Greek at Harderwyk, and secretary to the curators of that university. His works were numerous: and the time of his death is unknown.

TOLLIUS, James, M. D., brother of the preceding, professor of eloquence and Greek in the university of Utrecht, was the author of many learned works, and made several journeys for literary purposes, an account of which was given in a posthumous work, entitled "Epitome Itinerarium," published with notes, by Henninsius at Amsterdam. A work of somewhat similar title, viz. "Signa Itinerarii Italici," was published by himself at Utrecht in 1696, and contained the writings of some ancient ecclesiastical authors in Greek and Latin, with the editor's notes. He had also previously published an edition of "Aulisius, cum Notae Variorum," 1671: of "Ciceronis Oratio pro Licinio," with notes and a commentary, 1677; and of "Longinus," Gr. and Lat. with Boileau's French translation, and notes by himself and others. He had also directed his attention to alchemy, as appears by his "Manuductio ad Colum chemicum;" "Sapientia insensis, five Promissi chemici," and "Fortuita Sacra, in quibus, praeter critica nonnulla, tota fabularis Historia Graeca, Phæniecis, Egyptiana, ad Chemiam pertinere spirurit." From this work were selected comparisons between the Greek and Latin poets, printed at Leyden under the title of "Dissertationes selecte criticae de Poeticis Graecis et Latinis." Tollius died in 1696.

Another brother of this family, named Alexander, presented to the public an edition of "Appiani Alexandri Romanæ Historiarum," Gr. and Lat. Morey.

TOLLUNDY, in Geography, a town of Hindoostan, in Cude; 18 miles N. of Bareilly.

TOLMEZO, a town of Italy, in Friuli, with a castle, on the Tajamoto. Near the town is an extensive and celebrated linen manufacture, which, in the year 1782, produced 40,000 pieces of printed linen for exportation; 12 miles N.W. of Gemona. N. lat. 46° 23'. E. long. 12° 52'.

TOLMIDESSA, in Ancient Geography, a town of Syria, in the small country called Chaleidica. Ptol.

TOLMINO, in Geography, a town of Germany, and capital of a district, in the duchy of Carniola; 9 miles S.S.W. of Feldes. N. lat. 46° 12'. E. long. 13° 47'.

TOLNA,
TOLNA, a town of Hungary, on the Danube; 50 miles S. of Buda. N. lat. 46° 29'. E. long. 18° 41'.

TOLNÁI, a town of Hindeofoan, in the country of Baghna; 70 miles W. of Barhpaupur. N. lat. 21° 15'. E. long. 75° 5'.

TOLI, a town of Spain, in Catalonia; 22 miles N. of Balaguer. - Allo, a town on the E. coast of the island of Morty. N. lat. 2° 12'. E. long. 128° 18'.

TOLI Bay, a large bay on the E. coast of the island of Celebes, very broad at its entrance, and becoming narrower towards the bottom. S. lat. 1° 50' to 3° 5'. E. long. 121° 18' to 123°.

TOLOMETO, a seaport of Africa, in the country of Tripoli, anciently called Tripolitani; 350 miles E. of Tripoli. N. lat. 32° 30'. E. long. 20° 40'.

TOLOMMEI, Claudius, in Biography, a patron of literature and the arts, was born at Siena, of an ancient and noble family, in 1412. Having spent many of his earlier years at the court of Rome in the service of cardinal Ippolito de' Medici, he attacked himself to the duke of Parma and Placentia. Upon his death he removed to Padua, and in 1549 was nominated to the bishopric of Corioli, an island in the Adriatic. In 1552 he became one of the sixteen conservators of the public liberty of Siena, and joined three other citizens in an embassy to France. Having spent about two years in that country, he returned to Rome, and died there in 1555. Tolommei took pains in cultivating the Italian language, and contended that it ought to be denominated the Tuscan. With a view of reducing Italian verse to the measure and harmony of the Latin, he published, in 1539, his "Verifi e Regole della Poesia Nuova," but his scheme did not succeed. To him was ascribed the foundation of the academy "Della Virtù" at Rome, for the purpose of explaining the architectural work of Vitruvius; and for which he was eminently qualified by his classical and antiquarian learning.

TOLON, in Geography, an island in the Grecian Archipelago. N. lat. 37° 35'. E. long. 23°.

TOLONES, one of the smaller Philippine islands, near the N. coast of Samar. N. lat. 12° 30'. E. long. 124° 57'.

TOLOSA, or TOLOSA, a town of Spain, and capital of the province of Guipuscoa, celebrated for its fleet manufacture, particularly of sword-blades; 7 miles S. of St. Sebastian. N. lat. 43° 12'. W. long. 2° 7'.

Tolosa, in Ancient Geography, a town of Gaul, in the Narbonnese province, and diocese of Toulouf.

TOLTOÉ, a people of Africa, in Mauritania Caferiana.

TOLUM, in Geography, an island in the East Indian sea, of a triangular form, and about 45 miles in circumference, confidered as one of the Salibano islands. N. lat. 4° 12'. E. long. 126° 28'.

TOLPAS, in Ancient Geography, a place of Spain, between Ilerda and Pertusa. Anton. Itin.

TOLPIAS, in Geography, a river of Ruffia, in the province of Ullinj, which runs into the Schegur, N. lat. 63° 40'. E. long. 58° 22'.

TOLPIAS, in Botany, a word of which we can trace neither the derivation nor meaning; and which seems to have been actually invented by Adanfon; nor is it the only instance of such a kind of forgery to be found in his book. We have sometimes been tempted to suppute these seemingly original names of Adanfon might be reduced from some remote sources of nomenclature or literature; but the search has always proved vain. He was no scholar, nor is his new French orthography founded in any extensive knowledge, much less any refined taste, in language, but in more affectation. Gartner cannot be excused for adopting the above name, when he had the choice of an excellent one, (see DREPANA,) given by Jussieu to this same genus. Nevertheless, Tolpis is now established, and cannot without inconvenience be set aside. - Adanfon. Fam. des Pl. v. 2. 112. Gärtn. v. 2. 371. t. 166. Willd. Sp. Pl. v. 3. 1668. Alt. Hort. Kew. v. 4. 461. Sm. Prodr. Fl. Grac. Sibth. v. 2. 140. Lamark Illust. t. 651. Bivona Monogr. delle Tolpids. (Drepania; Juss. 169. Desfont. Atlant. v. 2. 232.) - Chais andoder, Synonyem Polyanthus-equalis. Nat. Ord. Compotis seminifolius, Linn. Chloeares, Jull. Gen. Ch. Common Calyx ovate, of many linear, nearly equal, parallel, close scales, with a distinct series of somewhat scattered and lax, awl-flaped, incurved scales at the base. Cor. compound, imbricated, uniform; the florets numerous, equal, all perfect, each of one petal, ligulate, abrupt, five-toothed. Stom. Filamenta five, capillary, short; anthers united within a cylindrical tube. Pfl. Gemere ovate-oblong: style thread-shaped, the length of the stamens; stigmas two, recurved.Periph. none, except the cloven permanent calyx, tumid at the base. Seeds solitary, small, obovate, frariated; down felli; that of the radius of numerous, little, membranous, equal, acute, marginal teeth, or scales; that of the disk of similar scales, accompanied by two, four, or ten straight, rough bristles, longer than the seed. Recip. cellular, with crenate edges to the cells.

Eff. Ch. Receptacle cellular. Calyx equal, with many awl-flaped scales at the base. Seed-down of the circumference toothed: that of the disk toothed, accompanied by several bristles.

The present genus agrees most with Crepis in habit. (See that article.) The seed-down affords a clear distinctive character, and the outer scales of the calyx do not assume that enlarged, dilated, tumid appearance so remarkable in Crepis.

1. T. barbata. Purple-eyed Succory-hawkweed. Willd. n. 1. Ait. n. 1. Prodr. Fl. Grac. n. 1942. Bivona Tolp. 13. t. 3. Savi Etrusc. v. 1. 183. (Crepis barbata; Linn. Sp. Pl. 1131. Curt. Mag. t. 35. Hieracium medio negro batticum majus; Hern. Parad. 185. t. 185. H. calyce barbattum; Column. Eophr. v. 2. 28. t. 27. f. 1. H. medio nigrum, flore majore; Ger. Em. 1625.) - Leaves elliptic-lancolate, toothed. Outer scales of the calyx falcate, dient, longer than the inner. Bristles of the seeds two or four. - Native of sandy fields, or waste ground, especially near the sea, in the south of France, Italy, and the Levant, flowering in May and June. This elegant hardy annual, very easily of cultivation, has, for two hundred years past, been common in gardens, where it produces, from midsummer till the autumnal frosts, abundance of flowers. The stems are branched, erect, spreading or decumbent, rather downy, lefthy, repeatedly subdivided at the top, in a corymbose, or somewhat forked manner, the flowers, which are at first terminal and solitary, being copiously overtopped by their successors. The scales of their outer calyces are partly scattered down the stalk. Corolla expanded in the early part of the day only, and in sunshine, an inch, more or less, in diameter, of a delicate pale lemon-colour; a number of the central florets of a dark purplish chocolate hue, forming an almost black velvet-like spot, or eye, in the middle, which constitutes the chief beauty of the flower. The leaves are rather regularly toothed, alternate, sessile, green, slightly roughened; the upper ones mostly entire.

TOLRE, in Geography, a town of Hindoostan, in the Carnatic; 15 miles E. of Volconda.

TOLSEY, in our Old Writers, denotes the places where merchants meet in a city or town of trade.

The word is compounded of the Saxon tol, tributum, and see, fedes.

TOLSTÁ, in Geography, a town of Sweden, in Welf Gothland; 30 miles W.S.W. of Linköping.

TOLSTAN, in the P. coast of the island of Lewis. N. lat. 58° 22'. W. long. 6° 6'.

TOLSTONSKOJ, an offshoot of Ruffia, in the government of Tobolkin, on the Eniefi; 280 miles N.W. of Turuchank. N. lat. 70° 16'. E. long. 85° 14'.

TOLT, in Law, a writ whereby a cause depending in a court-baron is removed into the county-court. Old Nat. Br. 4. See Pone.

TOLSTEN, in Geography, a river of Chilli, which runs into the Pacific ocean, S. lat. 38° 50'.

TOLTERCAIZTLI, in Natural History, the American name of a flume, much resembling the nucivarius lapsus, but variegated with red and black spots. They use the powder of this flume and crystal, calcined together, for difcates of the eyes.

TOLU, in Geography, a sea-port town of South America, in the province of Carthage, with a harbour open to the Spanish Main; in the environs of which is found the celebrated balsam from which it gives name; 50 miles S.E. of Carthage. N. lat. 9° 45'. W. long. 75° 25'.

TOLU Balfam. See BALSAM.

TOLU-Tree, Balfam of, in Botany. See TOLUIFERA.

TOLVA, in Geography, a town of Naples, in Baolfiaca; 9 miles S.S.E. of Acranza.

TOLUCO, a town of Mexico, in the province of Mechocan; 100 miles W.N.W. of Mechocan.—Also, a town of Mexico; 28 miles S.W. of Mexico.


Gen. Ch. Cal. Perianth inferior, of one leaf, bell-shaped, five-toothed, nearly equal; one angle (or tooth?) more dilatant than the rest. Cor. Petals five, inserted into the receptacle; four of them equal, linear, somewhat longer than the calyx; the fifth twice as large, infebrly heart-shaped, its claw the length of the calyx. Stam. Filaments ten, very short; anthers longer than the calyx. Pijf. Germen oblong; style scarcely any; stigma acute. Peric. and Seed not described.

Eff. Ch. Calyx five-toothed, bell-shaped. Petals five; the lower one very large, infebrly heart-shaped. Style none.

1. T. Balfamum. Balfam of Tolu. Linn. Sp. Pl. 549. Willd. n. 11. Woodv. Med. Bot. t. 191. (B. tolutanum; Dale Pharmæ. 304. B. tolutanum, folis cerasi foliis filmis, quod candidum est; Bauh. Pin. 401.)—Native of the province of Tolu, in South America. We have never seen any original specimen of this plant, nor any figure, except Dr. Woodville's, drawn from a dried specimen in Sir Joseph Banks's collection, the authority for which is not mentioned. Miller appears to have raised plants from seeds sent by Houltom, but they probably did not prosper long. Perhaps the specimen just mentioned was obtained from the
fame source. Authors describe the tree as lofty, with large branches, and a thick greyish bark; the leaves like those of the Carob. If so, they are pinnate, as the natural order of the genus should indicate; but of which the Rev. Woodville seems not to have been aware. The flowers in his figure are racemose. All we can make out respecting the characters of this tree confirm the account of Mutis, of its close affinity to Myroxyylon, see that article, p. 1; the long-flaked germen of the latter appearing to be the only difference which is even obliquely hinted. The generic name of Toluifera therefore, though the most ancient, should give way to Myroxyylon, as the most comprehensive.

*T. cochinchenensis, Loureir. Cochinich. 262, having simple leaves, and a berry with one or two seeds, should be, as Poiré observes, in Lamark's Dict. v. 7. 696, to be very different from the original Toluifera, and more probably a Bursera.

Toluifera, in Gardening, comprises a plant of the exotic tree kind for the flove, of which the species cultivated is the balsam of Tolui tree (T. balfani).

Method of Culture.—This tree is raised from seeds, which should be obtained from its native situation, and be sown as soon as possible afterwards in pots of light earth, plunging them in the bark-bed of the flove. When the plants have three or four inches growth, they should be potted off separately, giving them water, and replunging them in the bed. They afterwards only require to be managed as other woody flove plants.

They afford variety in flove and hot-house collections among other potted plants. A balsam of great use in medicinal compositions is extracted and prepared from this tree.

TOLZ, in Geography, a town of Bavaria; 24 miles S. of Munich.

TOM, a river of Ruffia, which rises 80 miles S.E. of Kufnetz, in the government of Kolivan, and runs into the Obby, 32 miles W.N.W. of Tomk. N. lat. 56° 40'. E. long. 84° 14'.—Also, a river of China, which runs into the Heng, 5 miles S. of Heng-chan.

Tom Zil, a town of the Arabian Irac, on the Tigris; 118 miles S.E. of Bagdad.

TOMADÆORUM INSULÆ, in Ancient Geography, islands situated in the Arabian gulf. Ptol.

TOMEUS, a mountain of the Peloponnesus, in Messenia, near the premontary Coryphanthus. Thucydidès.

TOMAHABI, in Geography, a town of Peru; 60 miles S. of Potoú.

TOMAN, or Touman, a kind of imaginary money used among the Persians in the keeping of their books, and to facilitate the reduction of money in the payment of considerable sums. The toman contains 50 ababhis, 100 mamoids, 200 frightrees, 1000 dinars bifi, or 10,000 dinars simple. The toman and dinar are imaginary monies. An ababhi is worth 2 mamoids, 4 frightrees, 40 kafefquis, 20 dinars bifi, or 200 dinars.

D'Herbelot derives the word from the language of the Moguls, where it signifies the number of ten thousand. Eben Arabicchah says, that the word toman, when used to express a weight, or money, contains ten thousand silver Arab drachmex, called mehtkal; which are a third lighter than the Attic.

The Moguls, &c. frequently use toman for ten thousand men; and say, e.g. that the city Samarcand contains seven tomans of people fit to bear arms; and that of Andechan nine tomans.

TOMAN, in Geography, a kingdom of Africa, situated on the side of the river Gambia, W. of Kantor.

TOMANANISA, a town of Japan, in the island of Niphon; 75 miles W. of Mexco.

TOMAR, a cairn of Bengal, bounded on the N. by Sillee, on the E. by Pachete, on the S.E. by Singboon, and on the W. by Nagpour; about 20 miles long from N. to S., and from 10 to 20 broad.—Also, a town of Bengal, and chief place of a cairn of the same name; 145 miles W. of Calcutta. N. lat. 23° 10'. E. long. 85° 53'.

TOMAR. See THOMAR.

TOMARA, in Ancient Geography, a town of India, on this side of the Ganges. Ptol.

TOMARE, a mountain on the confines between Thethroia and Chonisia, two countries of Epirus.

TOMATO, in Botany, a word whose origin we have not ascertained, is the name of the Love-apple, or Solanum Lycopersicum. See SOLANUM.

TOMB, in Geography. See TUMB.

Tomb, includes both the grave or sepulchre, wherein a dead body is interred, and a monument erected to preserve his memory.

The word is formed from the Greek, ταφα, taphos, sepulchre; or, according to Menage, from the Latin, tumba, which signifies the same.

Among the Romans, none but the emperors, vellals, and perfons signalized by great actions, were allowed to have tombs in the cities, the rest were all in the country, near the high roads; whence those common words, Sifles, &c. viator, which are still retained in the inscriptions of our monuments, though set up in churches, &c.

At Anchiale was anciently seen the tomb of Sardanapalus, with this inscription in verse: "Sardanapalu built Anchiale and Tarfas in one day: go passenger, eat, drink, and be merry; the rest is nothing." Strab. Geo. lib. 14.

The Romans had a kind of empty tomb, called cenotaphium, an honorary tomb, in which the body of the deceased was not laid. See CENOTAPHI.

The occasion of this was a superstitious notion, that the souls of those who had not funeral honours, wandered a hundred years by the banks of the rivers of hell, before they were admitted to pass over. The cenotaphium being made, the same ceremonies were practised as at real funerals.

The cenotaphium were inscribed with the words ob hono-

rom, or memoria factum, whereas other tombs in which the asbes were really deposited, were inscribed D. M. S. q. d. facer to the manes. When the words ταφοτιον were added, it declared the asbes enclosed therein belonged to a person infamous for some crime.

TOMB-Stones, Characters on. See CHARACTER.

TOMB-Stones, Epitaphs on. See EPITAPH.

TOMBA, in Geography, a river of Peru, which runs into the Pacific ocean, S. lat. 17° 35'.

TOMBAC, a name given by the French to a yellow metal, very nearly approaching to what we call Prince's metal, and made by mixing and fusif together a large quantity of zinc with a smaller of copper. See GOLD-Coloured Metal.

TOMBAHONDA, in Geography, a town of the kingdom of Burfalli. N. lat. 15° 56'. W. long. 14° 57'.

TOMBALY POINT, a cape on the west coast of Africa. N. lat. 10° 48'. W. long. 3° 36'.

TOMBAY, a town of Pegu; 6 miles S. of Pegu.

TOMBEBEUF, a town of France, in the department of the Lot and Garonne; 12 miles N.W. of Villeneuve d'Agen.
TOMBI, a town of Africa, in Quoa. N. lat. 6° 50'.

TOMBIGHE, a river which rises in the northern part of Georgia, enters West Florida, and joins the Alabama to form the Mobile, N. lat. 31° 32'. W. long. 87° 50'.—Alfo, a town of West Florida, on a river of the same name. N. lat. 32° 52'. W. long. 82° 50'.

TOMBUCTOO, or Tombuctoo, a city of Africa, the capital of a rich and populous kingdom, said to have been built in the 15th century by Sulliman, pretended to be of the royal race of Morocco. The extent of its territory is very imperfectly ascertained; but it is said to extend northward to the conines of Sahara or the Desert, comprehending a tract of country about 90 miles in breadth; its western boundary being 130 miles W. of the city, and the eastern extending to the Bahar Soudan, or Sea of Soudan, which is a lake formed by the Nil-El Abbeed or Niger, whose opposite shore is not discernible. The city is situated on a plain, surrounded by sandy eminences about twelve miles N. of the Niger, and three days' journey from the confines of Sahara. It is said to be twelve miles in circumference, but without walls. The town of Kabra, situated on the banks of the river, is its commercial depot, or port. By means of a water-carriage E. and W. of Kabra, the trade of Tombuctoo acquires great facility; and hence the various articles of European as well as Barbary manufactures brought by the akkabahs, or caravans, from the N. of Africa, are distributed to the different empires and states of the Soudan and the South. This great mart is retorted to by all nations, whither they bring the various products of their respective countries, to barter for the European and Barbary manufactures. The houses at Tombuctoo have, in general, no upper apartments; they are spacious, and of a square form, with an opening in the centre, towards which the doors open. Contiguous to the door of entrance is a building, confining two rooms, called a duara, in which visitors are received and entertained, so that they do not see the women, who are very handome. The men are so excessively jealous of their wives, that when the latter visit a relative, they are much muffled up, in order to disguise their persons; their face is also covered with their garment, through which they peep in order to explore their way. The king, whose authority has been acknowledged at Tombuctoo ever since the death of Muley Ithmael, emperor of Morocco, is the sovereign of Bambarra; his name in 1800 was Woolo; he is a black, and a native of the country which he governs; his usual place of residence is Jinnie, though he has three palaces at Tombuctoo, which are said to contain an immense quantity of gold. Many of the civil appointments at Tombuctoo, since the decease of Muley Ithmael, and the consequent decline of the authority of the emperor of Morocco, have been occupied by Moors of Maroquin origin; but the military appointments, since the forementioned period, have been distributed among Negroes of Bambarra, assigned to them by the king Woolo. The inhabitants are chiefly Negroes, who resemble the Arabs in hospitality, and value themselves on their attention to strangers. The various costumes exhibited in the market-places and streets indicate the variety and extent of the commercial intercourse with the different nations of Central Africa; the individuals being each habited in the dress of his respective country. The toleration prevalent at Tombuctoo is worthy of notice. The divan, or Palama, never interferes with the religious tenets professed by the different people who resort thither for commercial or other purposes. The police of this place is extolled; robberies and house-breaking are fearedly known; the inhabitants of the town are peaceable and orderly. The government of the city is intrusted to a divan of twelve alejma, or men learned in the Koran, and an umpire, who retain their appointments, received from the king of Bambarra, for three years. Their power is great. The civil jurisprudence is directed by a cali, who decides all judicial proceedings according to the spirit of the Koran; he has twelve attorneys, called tallaks, who attend him, and to each of these belongs a separate department of justice. It is asserted that till of late no Jews were permitted to enter the town; and it is said, moreover, that those Jews who now resort thither, are obliged to become Mahometans. The probable reason of the exclusion of the Jews is deduced from the extreme jealousy of the individuals of the Moorish factory, whose avarice induces them to prevent any perfom from sharing their emoluments, whenever a plausible pretext can be found.

The climate of Tombuctoo is much extollcd as salubrious and invigorating; infomuch that there is no man of the age of eighteen, who has not his wives or concubines; and it is a disgrace for a man to attain the age of puberty without being married. The natives possess an elegance and frugality of manners, a great flow of animal spirits, and an invincible attachment to their country. The accommodation for travellers is very simple; camels, horses, drivers and merchants, rendezvous at a large house, with an open space in the middle, round which are rooms sufficient for containing a bed and a table. The merchants are accommodated with houses during the period of their stay, for bartering and exchanging their commodities, which they invest in the produce of Soudan as speedily as possible, so that they may be ready about September for the akkabah, and proceed to Morocco, Cairo, Jidda, or some other place. The manufactures of different kinds of apparel are prepared chiefly by the women in their own houses, whenever they cannot procure European cloths and linens, or when there is a great scarcity of Fez and Taffilet manufactures of silk, cotton, and woolen. The soil about Tombuctoo is generally fertile, and near the river produces rice, millet, Indian corn, and other grain; wheat and barley grow in the plains, and are cultivated principally by the Arabs of the tribe of Braebeh, who receive a tribute from the town for forbearing to plunder the caravans from the north which pass through their territory. Coffee grows wild here, as also indigo, which latter is occasionally cultivated, and produces a very fine blue dye used in their various cotton manufactures. The husbandmen are very expert in the management of bees: honey and wax are abundant, the former being used at Tombuctoo as an article of food, and the latter for candles. The river about Kabra affords a supply of fish. The mines of gold which lie S. of the bed of the river belong to the sultan Woolo, who refides at Jinnie; but his gold is deposited in his palace at Tombuctoo. The exact bearing and distances of places from Tombuctoo are not satisfactorily ascertained. The city appears, says Mr. Jackson, to be situated 1500 miles S.S.E. of Fez, 1750 miles about S.S.E. of Akka, Tatta, and Wedinoon; 1300 miles in nearly the same direction from Morocco; 1320 miles from Taffilet; about 230 miles E. of Jinnie; and 1000 miles E. of Houafl. Major Rennell, in his Geographical Elucidations annexed to the Proceedings of the Association for discovering the Interior of Africa, says that Tombuctoo is fifty days' caravan travelling from Tatta, a place situated on the frontiers of Morocco, Drah, and Zenhaga, and on the route from Morocco and Suez to Tombuctoo. Tatta is found to be nine and a half days' journey from Morocco; and one day short of a station on the Wad-drah or Drah river, which station is four days, or sixty-six miles lower down than Tinguleen, a place in D'Anville's and Delisle's map of Africa.
Africa. It was also twelve days' journey from the city of Nun, or Non, which city, by Ben Ali's account, is two days from the sea-coast, and well known to be opposite to a cape of the same name. These authorities, says the major, enable us to place Tatta 170 miles S.S.E. from Morocco. Thus, 50 days from Tatta to Tombuctoo, at 13 miles each day, produce 650 miles. By Ben Ali's report, Tombuctoo is 48 days from the capital of Sultan Fullan, lying within the district of Gallan, on the river Senegal: 48 days, at 13 each day, produce 650 miles; and this line of distance meets that from Tatta in lat. 19° 40', and nearly midway between Gallan and Caffina. In this position it falls only 28 miles to the N.W. of D'Anville's Tombuctoo.

The country north of Tombuctoo is inhabited by a powerful tribe of Arabs, called Brabeehs, whose original Rock emigrated in the eighth century, and took possession of a tract of country bordering on Egypt westward: they are a turbulent, refractory, and warlike tribe, but much afraid of fire-arms, as they have no such, being armed only with the lance, and occasionally with knives or daggers. There is another nation, situated many journeys south-east of Tombuctoo, who worship the fun, and abstain from animal food, subsisting on milk and vegetables. In a part of the country between Tombuctoo and Caffina, is discovered a race of people, compared by the Arabs to the English, who speak a language different from all the others known in Africa, and resembling the whistling of birds, to which they compare the English language. They ride on saddles like those used in England, and wear ruffled jupons, which are peculiar to themselves. Their faces are covered by turbans, and their weapons are swords, bows, arrows, and lances. They are said to be a very superstitious people; their bodies, as well as their houffes, being covered with charms or amulets. It is said that there is a water communication between Tombuctoo and Cairo; but the expense of land-carriage by camels being more moderate, the other is not used.

Tombuctoo has, from time immemorial, been the great emporium of Central Africa; an extensive and profitable trade having been carried on with the various maritime states of North Africa, viz. Morocco, Tunis, Algiers, Tripoli, Egypt, &c. by means of akka-bahas, or accumulated caravans, which cross the Sahara, or Great Defert, generally between the months of September and April: these akka-bahas consist of several hundred loaded camels, accompanied by the Arabs who let them to the merchants. The articles transported from Fez to Tombuctoo are principally the following; viz. various kinds of German linens, Irish linens, muffins, canbriac, fine cloths, coral beads, amber-beads, pearls, Bengal raw silk, bras nails, coffee, fine hyson teas, refined sugar, and various manufactures of Fez and Tarflet, such as shawls and falsies of silk and gold, hawks or pieces of silk, of cotton and silk mixed, of cotton and wool: to which may be added red woollen caps, turbans, Italian flaxs, nutmegs, cloves, ginger, and pepper, Venetian beads, cowries, tobacco and salt. The produce of Soudan in return for these articles, consists principally in gold-dust, twisted gold rings of Wangara, gold rings made at Jinnie, bars of gold, elephants' teeth, gum of Soudan, grains of Sahara, or grains of paradise, odoriferous gums, and a great number of slaves purchased at Tombuctoo of the flaxies, or slave merchants, and brought from those regions which border on the mountains of the Moon. To these we may add ostrich-feathers and ambergris, collected on the confines of the Defert. The circulating medium at Tombuctoo is (tubber) gold-dust, which is exchanged for mer-
fent fashion; the lines being from two to five in number, cut on each cheek-bone, from the temple straight downwards: they are also stained with blue. These incisions being made on the faces of both sexes when they are about twelve months old, the dyeing material which is infected in them becomes scarcely visible as they grow up. The ornaments of the natives are similar to those which are generally found among savage tribes. It does not appear that they hold any public exercise of religion, or have any house of worship, or ever meet to pray, though some ceremony, seemingly religious, was observed at the burial of the dead: but Adams was probably not a very accurate inquirer into these matters. Park describes the natives of Soudan as saying a prayer on the appearance of the new moon; and if the religious observances of these people were so rare of occurrence, it is not surprising that they escaped the feaman's notice.

Adams says that he saw no shops at Tombuctoo. The articles bought for sale, which consisted chiefly of tobacco, tar, gunpowder, blue nankeens, blankets, earthen jars, and some flks, are obtained from the Moors, and remain in the king's house until disposed of. The only other objects of trade seemed to be slaves. Gunpowder appeared to be more valuable than gold, since a greater weight of the former was given in a barter of the two articles. The exports of this people were chiefly gold-dust, ivory, gum, cowries, ostrich-feathers, and goat-kins, the latter stained red and yellow. Slaves were procured by purchase, and also by predatory incursions into neighbouring states. The king of Tombuctoo seemed to be delphic, but the government was mildly exercised; he and his wife were old and grey-headed: blue nankeen, adorned with gold lace, formed the usual dress of both; and the queen was accoutumeth to fit and look at Adams and Stevens for hours together. The palace consisted simply of eight or ten small rooms on a ground-floor, not even white-washed, and built of clay and grais. To the surplice of the African committee, Adams did not recollect to have heard there of the Joliba river, a subject of such interesting research; but we should consider that the fame river would probably pass under different appellations in the territories of different states. The name of La Mar Zarah closely corresponds with that of the Zayr, or Congo river, presumed by Park to be the termination of the Niger in the Atlantic ocean; but the distance from Tombuctoo to that mouth renders it highly improbable that the river should possess its name throughout. It should be added, also, that the Tombuctoo river is supposed to fall into the Niger at twelve miles distance from that town; yet the breadth ascribed to it by Adams will not allow us to consider it as a mere tributary stream. The editor draws two simple conclusions from this information relative to Tombuctoo; the one, he says, propitious, and the other adverse to the progres of discovery and civilization: viz. "the mild and tractable manners of the Pagan Negroes of Soudan, and their friendly deportment towards strangers," on the one hand; and on the other, "the extended and baneful range of that original feature of African society—Slavery."

TOME, a small island near the west coast of France. N. lat. 48° 50'. W. long. 3° 24'.

TOMÉ, a bound book or writing that makes a volume.

TOMEION, formed from town, section, a general name used to express any sharp or cutting instrument, used either in surgery or in the mechanic arts.

TOMELLOSO, in Geography, a town of Spain, in New Castile; 58 miles S.E. of Toledo.

TOMETOSE LEAF, among Botanists. See Leaf.

TOMETUM, properly signifies flocks or locks of wool, but by botanists is used for that soft downy matter which grows on the leaves of some plants, hence denominated tomentose; as verbaecum tomentosum, carduus tomentosus, &c.

TOMETUM Cerebri, in Anatomy, the flocculent internal surface of the pia mater, with its waving productions belonging to the intervals of the convolutions. The vessels, which enter the cerebral substance, give to the whole a completely villous appearance: it is best seen when the vessels have been injected, and the membrane floats in water.

TOMEMPDA, in Geography, a town of South America, in the audience of Quito; 5 miles S.E. of Jaen de Bracamoros.

TOMERIT, a mountain of European Turkey, in Albania; 12 miles E. of Dulcigno.

TOMEROS, in Ancient Geography, a river of Asia, in Carmania. Arrian.

TOMERUS, a river of India, W. of the Indus and Arabus, so named by Nearchus. It had its source towards 27° 20' of lat. traversed the country of the Oritez, and discharged itself into the sea about 25° lat.

TOMESOSBI, in Geography, a lake of Lower Canada, whence issues the branch of the river St. Francois, on the borders of Vermont.

TOMEX, in Botany, from tomentum, woolly down, alluding to the pubescence of the plant. The original Tomex of Linnaeus proving a Callicarpa, see that article, f. 5. Thunberg transferred the name to a new Japanese genus, with which it now remains. Such adaptations of disordered names are not entirely to be condemned, and yet we cannot but think them more allowable than the too frequent practice of Linnaeus, of applying ancient Greek or Latin ones to new genera, awesomely different from the original plants, though the latter could not be averteded.


TOMI, in Ancient Geography, a town of Lower Media, towards the mouth of the Danube, near the Euxine sea. This town was considerable, and was the place of Ovid's exile. It was the metropolis of Pontic Scythia. According to this poet, in his third book of Triltes, this city was founded by a colony sent thither from Miletus. Tori was declared the metropolis of Scythia under the emperor Theodosius, and it was the seat of the bishop of that country.

TOMIAS, in Antiquity, an appellation given to the sacrifice offered at the ratification of solemn leagues. It was so called because they cut out the topicles of the victor, and took the oath standing upon them.

TOMIDA, in Geography, a town of Japan, in the island of Nipphon; 5 miles S.S.W. of Quano.

TOMIN, in our Old Writers, a weight of twelve grains, used by goldsmiths and jewellers.

TOMINA, in Geography, a government of Peru, in the vicereignty of Buenos Ayres, and archbishopric of La Plata, which begins about sixteen leagues south-east from the city of La Plata. The climate here is hot, and consequently its productions are such as are common to hot countries. Some parts have vineyards, and in others are made considerable quantities of sugar. It also abounds in cattle and sheep. Its extent in some parts is nearly forty leagues. The vicinity of some free Indians is a continual uneasines to the towns in this jurisdiction, and even to the city
city of Plata itself, as they have often attempted to surprize it. Tomina, the chief town, is situated 80 miles E.N.E. of La Plata. S. lat. 10° 10'. W. long. 65° 35'.

TOMINE, in Commerci, a weight for gold and silver in Spain. Gold is weighed by the Cahillian mark of 50 cattallos, 400 tomen, or 4800 grains. Silver is weighed by the same mark, but it is divided into 8 ounces, 64 ochavos, 128 adarines, 384 tomen, or 4680 grains. The Cahillian mark weighs 3557 English Troy grains; hence 144 such marks correspond nearly to 89 lbs. English Troy weight; and, therefore, 96 Cahillian ounces = 89 Troy ounces.

TOMINEIO, in Ornithologia, a name by which some authors have called the guanaimbi, or humming-bird, the smallest of all birds.

The name seems derived from the Spanish tomine, a grain weight, as if they would call it a bird of a grain weight.

TOMINY, in Geography, a town on the east coast of the island of Celebes, in a bay to which it gives name. S. lat. 0° 45'.

TOMINY Bay. See Gunong-Tellu.

TOMISA, in Ancient Geography, a small country of Asia Minor, which separated Cappadocia from Mount Taurus.—Alfo, a town of Asia, upon the easterh bank of the Euphrates.

TOMISUM, or TOMISUS, a town of Asia, in Greater Armenia, in the country named Sophene. Strabo.

TOMKIN and TOMSPON. See TAMPION.

TOMKINS, THOMAS, in Biography, a disciple of Bird, M. B. and gentleman of his majesty's chapel (James I.) was an excellent musician. He published fongs of three, four, five, and six parts, without a date. But it appears by a copy of these fongs in the library of Chrift-church college, Oxon. that they were published in 1622.

There are two very curious compositions by Tomkins, in the 3d vol. of Dr. Tudway's "Collection of Cathedral Music," in the Britifh Museum: the one is a full anthem, in twelve parts; and the other an anthem in canon through-out of four parts in one, both well worthy the disciple of the admirable Bird. Indeed, by the compositions we have offered, or examined in score, of Tomkins, he seems to us to have had more force and facility than Morley. In his fongs there are melody and accent, as well as pure harmony and ingenious contrivance.

Thomas Tomkins, the father of Bird's disciple, was chanter of the choir at Gloucefter, whose family produced more able musicians, during the 16th and 17 centuries, than any other which England can boast. Thomas, the younger, had several brothers, musicians, &c. who distinguished themselves both in composition and performance; among whom was Giles Tomkins, according to Anthony Wood, a most excellent organift of the cathedral at Salfbury; John Tomkins, organift of St. Paul's cathedral, and afterwards gentleman of the chapel-royal; and Nicholas Tomkins, one of the gentlemen of the privy-chamber to Charles I. Thomas, the subject of the present article, the disciple of Bird, and bachelor of music, was afterwards organift of the cathedral of Worcester, gentleman of his majesty's chapel, and, at length, organift. Though he contributed to the "Triumph of Oriana?" in the reign of queen Elizabeth, he was living after the breaking out of the grand rebellion, about which time he published a work in ten books, or separate parts, entitled "Mufica Deo facra et Ecclefiæ Anglicana," consisting of anthems, hymns, and other compositions suited to the church-service. The copy of these compositions, in Chrift-church college, Oxford, is dated 1664. If this was not a second edition, it is probable that his son was either the author, or at least the editor of the work. By a copy of his fongs, in the fame collection, that have been paid above to be of uncertain date, they appear to have been printed in 1622.

Butler, in his "Principles of Music," published 1636, speaking of the Lydian mood of the ancients, which he seems to have perfuaded himself he underfood, says, "of this mood is that passionate lamentation of the musical king, for the death of his fon Abafalom, composed in five parts by Mr. Thomas Tomkins, now organift of his majesty's chapel; the melodious harmony of which, when I heard it in the music-school (Oxon.), whether I should more admire the sweet well-governed voices, with confonant instruments, of the fingers, or the exquisite invention, wit, and art of the composer, it was hard to determine." And he calls Mr. Thomas and Mr. J. Tomkins aureum par Musiciorum.

A fet of his vocal church music, in four and five parts, MS. is lodged in Magdalen college, and a printed copy in Chrift-church, Oxford. The manuscript copy was presented to Magdalen college by James Clifford, who, in 1663, published a collection of the words, with the names of the composers of such services and anthems as continued to be sung in our cathedrals. To this book Ant. Wood and others frequently refer in speaking of our choral music.

Beside the compositions by Tomkins, mentioned above, in the collection made for lord Harley, Britifh Museum, there are likewise several very learned and curious compositions by this author; particularly full anthems in eight, ten, and twelve real parts, fugato. About this time there was a rage for multiplying parts in musical compositions all over Europe; and Herculaneus labours of this kind, have been accomplished by Talbis, Bird, Benevoli, and others, who have already been mentioned.

TOMLINSON'S RUX, in Geography, a river of Virginia, which runs into the Ohio, N. lat. 40° 29'. W. long. 80° 41'.

TOMMASI, GIUSEPPE-MARIA, in Biography, a learned cardinal, was born at Alicata, in Sicily, in 1649, and at the age of fifteen entered among the Theatines at Palermo. He finished his studies at Rome, where he devoted himself to ecclesiastical literature, and from the accuracy of his mode of life, and the frequency of his devotional exercises, he was regarded as a model of the religious character. In order to the more successful prosecution of his favourite studies, he obtained access to the principal libraries at Rome, and in 1680 he published his "Codices Sacramentorum nongentis annis vetustissimorum," 40. dedicated to Chriflina, queen of Sweden. This was followed by some other works, and particularly, in 1688, by his "Sacrorum Bibliorum Tituli, &c." 40. in which he directed at his attention to the ancient mode of dividing the Bible. Indefatigably employed in the kind of study to which he was addicted, he published several works in Latin and Italian, chiefly on subjects of religious worship. In consequence of these labours, Clement XI. raised him to the dignity of cardinal in 1712, against his own inclination; but though his revenue was thus increased, he retained his former mode of life, and devoted the residue of his income to the benefit of the needy. He was a regular preacher, a diligent instructor of the poor, and a zealous promoter of a general reformation of manners in Rome. But death prevented the full execution of his laudable purpoieses in 1713, in his 64th year. The sanctity of his life procured
TONGA ISLANDS, a cluster of islands in the South Pacific ocean, confiding of the island of Tonga, which gives name to the whole of the cluster called Haapea, and the island of Vavao. It is a part of the group to which captain Cook gave the name of Friendly islands, but he did not include in his chart Vavao or Vavaou, which he did not visit; though this is the largest, and now comparatively the most important of all those belonging to the fame Archipelago, which, in his time, were under the fame government, and fill speak precisely the fame language, and observe the fame customs.

An account has been lately published from documents furnished by Mr. William Mariner, four years resident in those islands; 2 vols. 8vo. 1817. See FEEEJEE, FRIENDLY, HAAPEA, TONGATABOO, VAVAIO, &c.

TONGATABOO ISLAND, one of the Friendly islands in the South Pacific ocean, first discovered by Tasman, who called it Amsterdam; seen by captain Cook in the year 1773, and visited by him again in 1777. Tongataboo, or Tonga, is about sixty miles in circuit, somewhat oblong, though much broadest at the E. end; and its greatest length from E. to W. The south shore is straight, and confiils of coral rocks, eight or ten feet high, terminating perpendicularly, except in some places, where it is interrupted by small sandy beaches; on which, at low water, a range of black rocks may be feen. The west end is not above five or six miles broad, but has a shore somewhat like that of the south side; whereas the whole north side is environed with islets and islands, and the shore within them long and sandy. The east side or end is most probably like the south; as the shore begins to assume a rocky appearance towards the north-east point, though not above seven or eight feet high. The island may with the greatest propriety be called a low one, as the trees on the west part, where captain Cook lay at anchor, only appeared; and the only eminent part which can be seen from a ship, is the south-east point; though many gentle rilling and declining grounds are observable by one who is ashore. The general appearance of the country is that of great want of fertility. At a distance the surface seems entirely clothed with trees of various sizes; forms of which are very large. But above the reef, the tall cocoa-palms always raile their tufted heads; and are a very considerable ornament to any country that produces them. The boogo, which is a species of fig, with narrow pointed leaves, is the largest tree of the island. The winds are, for the most part, from some point between north and east; and when moderate, are commonly attended with fine weather. The bays of the island, as far as it could be observed, is entirely a coral rock, which is the only fort that presents itself on the shore. Of cultivated fruits, the principal are plantains, of which they have fifteen different sorts or varieties; bread-fruit; two sorts of fruit found at Otaheite, and known there under the name of jambu and eeeceve, the latter a kind of plum; and a vail number of shaddocks, which however are found as often in a natural state as planted.

The roots are yams, of which are two sorts; one black, and fo large that it often weighs thirty or pounds; the other white and long, seldom weighing a pound; a large root, called kappe; one not unlike our white potatoes, called mawhaha; the talo, or cocos of other places; and another named jeecje. Besides great numbers of cocoa-nut trees, there are three other sorts of palms, two of which are very scarce. The only quadrupeds, besides hogs, are a few rats, and some dogs, which are not natives of the place, but produced from some left by captain Cook in the year 1773, and by others got from FEEEJEE. Fowls, which are of a large breed, are domesticated here. Amongst the birds are parrots, somewhat smaller than the common grey ones, of an indifferent green on the back and wings, the tail blue, and the crest of a footy or chocolate brown; parroquets not larger than a sparrow, of a fine yellowish-green, with bright azure on the crown of the head, and the throat and belly red; besides another fort as large as a dove, with a blue crown and thighs, the throat and under part of the head crimson, as also part of the belly, and the rest a beautiful green; owls, cuckoos, king-fishers, and a bird of the thrush kind. The other land birds are rails, fly-catchers, and three sorts of pigeons. Of water-fowl, and such as frequent the sea, are ducks, blue and white herons, tropic birds, noddies, and white terns. The only noxious or disfiguring animals of the reptile or insect tribe are sea-snakes, scorpions, and centipedes. The infects amount to about fifty different sorts. The sea abounds with fish, though the variety is less than might be expected. The most common sorts are mullets, several sorts of parrot-fish, silver-fish, and albicorns; some harks, rays, pipe-fish, a sort of pike, and some curious devil-fish. The many reeds and islets on the north side of the island, afford shelter for an endless variety of shell-fish; amongst which are many that are esteemed precious in Europe, such as the hammer-oyster, of which, however, none could be obtained entire; a large indented oyster and several others, but none of the common sort; bananas; cones; a sort of gigantic cockle, found also in the East Indies; pearl-shell oysters, and many others. There are likewise several sorts of sea-eggs, and many fine star-fish, besides a considerable variety of corals, amongst which are two red sorts, the one most elegantly branched, the other tubulous. And there is no less variety among the crabs and cray-fish, which are very numerous. To which may be added, several sorts of the sponge, the sea-hare, and the like. See TONGA, S. lat. 21° 9'. E. long. 185° 14'. Cook's Third Voyage, vol. i.

TONGATORE, a town of Hindoosfan, in Golconda; 30 miles S.E. of Hyderabad.

TONGBLOW; a town of Burmah; 12 miles from Raymangong.

TONE, NIEUWE, a town of Holland, in the island of Overflakkee; 3 miles S. of Sommereyck.

TONE, Ouwe, a town of Holland, in the island of Overflakkee; 4 miles S.E. of Sommereyck.

TONGELREP, a river of Brabant, which runs into the Dommel, near Eynhoven.

TONGEREN, or TONGERS, a town of France, in the department of the Lower Meuse, late in the bishopric of Liege. This town is ancient, and was formerly governed by dukes. The collegiate church of Tongres is very ancient; they say it was the first on this side the Alps, built by St. Materne, who was sent by St. Peter to preach the gospel in Lower Germany, and became the first bishop of Tongres; which was erected into a diocese. It has three parish churches, and several religious houses. The French, in the year 1677, committed a thousand facrilleges and infeclences,
TONGERLOO, a town of France, in the department of the Dyle; 9 miles N. of Aerschot.—Alfo, 5 river of France, which runs into the Meufe, 3 miles below Maefyck. —Alfo, a town of France, in the department of the Lower Meffe; 4 miles N. of Stockem.

TONG-GIN, a city of China, of the firft rank, in Koei-tcheou, on the borders of Houquang. In the environs are gold and copper mines; 850 miles S.S.W. of Peking. N. lat. 27° 30'. E. long. 108° 37'.

TONGHIO, a town of Birma, and capital of a province, strongly fortifie. Here are manufactures of cotton cloth, and the environs produce the best beetle in the empire.

TONGKEL, one of the Sooloo islands. N. lat. 6° 2'. E. long. 121° 50'.

TONG-KIN-TSIN-FOU, a town of Corea; 48 miles W.S.W. of King-ki-tao.

TONG-LAI, a town of Corea; 70 miles S. of Koang-tcheou.

TONG-LAN, a town of China, of the second rank, in Quang-fu; 1075 miles S.S.W. of Peking. N. lat. 24° 27'. E. long. 106° 26'.

TONGOL-PATCHI, a town of Thibet; 30 miles N. of Oramchii Hotam.

TONGOLORE, a town of Hindooflan, in the Carnatic; 10 miles S. of Ongole.

TONGY, a river of Chili, which runs into the Pacific ocean, S. lat. 35° 40'.

TONG-PIN, a city of China, of the second rank, in Chat-tong, on the river Ta-tsin; 190 miles S. of Peking. N. lat. 36° 0'. E. long. 115° 50'.

TONG-POTRA, a town of Pegu; 50 miles S. of Lundey.

TONG-TCHANG, a city of China, of the firft rank, in Chat-tong, on the grand canal; 212 miles S. of Peking. N. lat. 36° 34'. E. long. 115° 40'.

TONG-TICHIEN, a city of China, of the second rank, in Se-tcheou; 720 miles S.W. of Peking. N. lat. 31° 0'. E. long. 114° 44'.—Alfo, a city of China, of the firft rank, in Se-tcheou. This city is strongly fortified, and is called a military city, because the inhabitants are all soldiers; the profefion defending from father to fon. Besides their pay, they have the lands which surround the city. These troops are difband in time of peace, and come to them in amusing, giving them in the garrifions that are in the frontier of the empire; 1000 miles S.W. of Peking. N. lat. 25° 20'. E. long. 103° 2'.

TONG-TCHUEN, a town of Corea; 85 miles E.N.E. of King-ki-tao.

TONG-TIN-HOU, a lake of China, in the province of Hou-quang, more than 80 leagues in circumference.

TONGTREE, in Rural Economy, a term applied to the pole of an ox-cart, or that of a waggon, and perhaps some other forts of carriages.

TONGUE, Lingua, in Anatomy, an oblong member, whose form and situation are sufficiently known, and whose ufes is to be the organ of taste, and the principal instrument of speech and deglutition. See DEGLUTITION.

The upper edge of the tongue is covered with a papillary nervous tissue, which is spread two membranes. The outer of these membranes is pretty thick, and full of papillae, of a pyramidal figure, especially towards the tip, which pizzle fland pointing towards the root of the tongue in a bending posture, which makes their figure be concavo-convex. These papillae, or papillae, are fo very minute and slender in men, that they make the cattle appear on the upper part villous, especially as they approach nearer to the root. The figure of the papillae, in human tongues, is not exactly distinguishable from the naked eye as not to need the microscope. In brutes they are generally larger, fliffer, and more conspicuous; and in some almost cartilaginous, as may be felt in the tongues of cats and oxen, but more feñibl in lions. On the upper side, at a little distance from the tip, this membrane becomes thin, smooth, and glibrous, and, as it were, polished by the lower parts of the mouth on which it folds.

Under this lies a thin, soft, reticular kind of coat, punched through with innumerable holes, and always lined with a thick and white, or yellowish mucous. This membrane is fo exceedingly tender, and full of mucus, that it is not to be examined by the naked eye, unless boiled; by which it grows tough, and easily separable from the external membrane, and from the nervous part of the tongue, which lies immediately under it. After boiling, it appears like a kind of gauze, between whose threads innumerable holes appear, through which the edges of the papillary body underneath it are exerted. This membrane on the upper side, next the outward, appears white, with a coat towards yellow, but is black on the side next the tongue.

Many authors do not allow this to be a membrane, and will only have it to be a mucous hardened by boiling; but since it has so much of the resemblance of a membrane, and that authors agree in allowing two membranes to the tongue, Dr. Drake does not scruple to number it among them. Thus there does not appear to be any other second membrane; reckoning, with Malpighi, the smooth part under the tongue a part of the outer membrane, some, however, have considered it as a continuation of a distinct membrane, which covers that of a papillary texture.

Immediately under this appears a nervous papillary body, spreading itself to a moderate thickness over the whole surface of the tongue. This body, on the under side, is every where level and smooth, except in some few places, where it is connected to the subjacent fuscous part by some nervous twigs which it sends into it. Malpighi distinguishes the papille, which make the principal part hereof, into three kinds, from their different magnitudes and figures when observed with the microscope; of which those feated on the sides and tip are very singular, resembling little round pyramids, with globes on their tips like the horns of rams. All these papille, which are the immediate organs of tasting, send their apices, or extremities, through the mucous membrane into the pyramidal papille of the outer membrane, which are hollow to receive them, and seem to be nothing else but a kind of cases to defend these nervous papille from injuries, which the faults and apertures of those bodies which we might take into our mouths might do them. See TASTING.

However necessary an organ the tongue be in speech, &c. yet infirmities have occurred, in which persons, who have lost their tongues, have spoken distinctly.

We have had in England an instance of this kind in one Margaret Cutting. See Philof. Tranf. N. 464. or Abr. vol. vi. p. 12irst. Idem. vol. xiv. p. 621.

Another occurs in Lambert's Memoirs, and another in the Memoirs of the Academy of Sciences.

To the infirmities briefly mentioned above, we may add the following account of a man at Montagu, in the Bas Poitou, who being feized with the small-pox in his fifth
or sixth year, loft his whole tongue by gangerne, or putrefaction; yet, notwithstanding, performed in perfection the five actions belonging to the tongue, viz. speaking, talking, spitting, chewing, and swallowing; nature having, with infinite artifice, given a new conformation to the mouth, proper to supply the want of the left organ. See J. R. Rolandi Agglomonomographia, five Descriptionis orae lingua quod perfecte loquiuntur et relinquae fuerunt Functiones naturaliter exercet; first published in French at Saumur, in 1639, translated into Latin by Car. Ruygerus, and published in the Ephem. German. D. an. 3.

For speech, instead of the ordinary provision, the little salivary part of the tongue remaining was infefted in the middle towards the palate, the teeth inverted, and long inwards, the mucous buccinators easily contracting between the dentes molares. In fine, there was a disposition in all the organs to produc speech without a tongue; for the breath issuing at the oval aperture of the larynx, was farther broken, and rendered vocal by the inflaction of the salivary body, the motion of the lips, the retraction of the buccinators, the tremulous agitation of the uvula, and the com motion of the lower jaw. Lastly, by the inversion of the teeth, the depression of the palate, the abundance of saliva, and the capacity of the mouth, the found was still farther modified and determined, so as to render it articulate. Habit, too, and the repeated attempts to speak at an age when the parts were easily flexible, had contributed greatly to the diftinofit of it.

For talking, it is evident from this, as well as other considerations, that the tongue is not the only organ of it, but that the palate is also a feat of this fene. For chewing, the office of turning the meat in the mouth was here performed by the lips and cheeks, the mucous of which repelled towards the maxillares such parts as in maflication might fall from one fide to the other. For the frit morfel he took, he could only chew on that fide into which he put it with his hand; the fecond he put in like manner on the other fide, and thus varied and supplied each alernately. For swallowing, the gravity of the food contributed fome thing to this, which he farther promoted by ftretching out his neck, inclining his head, and drawing back the buccinators within his teeth; all which were feconded by the mouth and fauces being well moistened with plenty of fialva. In effect, divers animals, as the tortoife and the crocodile, flock, &c. swallow without any tongue; and fifth, though their tongue is fixed inmoveable to their palate. For spitting, it was performed by the lips, aided by the internal contraction of the mouth, and the retraction of the buccinators over the grinders.

Roland’s infance was fingular at that time, but a parallel one has been fince observed in a girl at Lisbon, fifteen years old; of which an account was given, in 1718, to the Royal Academy of Sciences, by M. de Joffuen. Upon infpecting the mouth of this girl, there appeared nothing in all that part ordinarily polifhed by the tongue, but a little eminence in form of a papilla, between three and four lines high, in the middle of her mouth, fcarcey perceivable by the eye. Upon prefling this with the finger, a kind of motion of contraction and dilatation was perceived in it, which fhewed, that though the tongue was wanting, the mucous of which it was formed, and which were defined to give it motion, were nevtherdefe there. With the help of thofe the fpoke as diftinftly and easily as if nothing had been wanting: the diftinguifhed fakes like other people. For malformation, it was chiefly efrected by the motion of the lower jaw, which the drew nearer to, or farther from, the grinders of the upper, under which the food to be chewed was. In this action the fometimes alfo made ufe of her fingers, but much more in the action of swallowing, in order to protrude the mafiicfated food towards the orifice of the cefophagus. For drinking, she performed it like other people, excepting the attention the employed to prevent the liqour going down too faft; in order to which the kept her hand a little inclined forwards. Lastly, the actiion of spitting was supplied by the mucous of the papilla, which filled the lower part of her mouth; these rifting almost to a level with the teeth of the lower jaw, and the buccinators approaching towards both jaws, expressfed the saliva, and conducted it to the fphinfter of the lips, from whence the air, driven with violence from the larynx, served as a vehicle to expel it out of the mouth. Mem. de l’Acad. Scien. ann. 1718, p. 6—16. Juffieu, loc. cit. p. 7, feq.

Dr. Mortimer, from a MS. account of the life of the Rev. Mr. Henry Wharton, chaplain to archbishop Sancroft, informs us, that he was born with two tongues. Phil. Trans. vol. lxi. p. 232.

**TONGUE.**

**Injuries and Diseases of.** Wounds of the tongue have generally been divided, by writers on Surgery, into longitudinal and transverse. The former rarely happen, and seldom demand any but ordinary treatment. The fame may be said of punctured wounds of this organ; cases which are occasionally met with in practice.

The most frequent wounds of the tongue are those which are transverse. They are hardly ever produced by outward means; but usually by the teeth, when the lower jaw is forcibly and spasmodically brought against the upper one, while the tongue is out of the mouth, as sometimes happens in epilepsy and falls upon the chin. In this way, transverse wounds of considerable extent frequently happen, almost separating, in some instances, the apex from the body of the tongue. In such cases, the injury may easily be converted into a sort of cleft, which may remain for ever afterwards, and more or less interfere with the functions of the organ. This disagreeable consequence is more likely to happen, when no care is taken to keep the opposite sides of the wound in proper contact, and hinder them from becoming distant from each other.

Hence, certain writers on surgery have recommended all wounds of the tongue to be immediately closed with a future; and Richter, though by no means a conflant advocate for this method, is candid enough to allow, that it has succeeded in the bell manner, even in cases where the tongue was bitten nearly through. Anfangsgr. der Wundbur. b. iii. p. 24.

The application of a future to the tongue being attended with some pain and difficulty, a very simple bandage has been proposed for uniting transverse wounds of this part. (Pibrac, Mem. de l’Acad. de Chirurgie, tom. ix. p. 22. Le Blanc, Precis d’Operations.) Richter maintains, however, that the invention referred to does not anifer expectation. The main portion of it is a little fort of bag, in which the fore part of the tongue is confined. Thus all motions of this organ forwards, or laterally, may be effeetually prevented; but the patient is not deprived of the power of drawing it backward, that very action, which has a direct tendency to make the sides of a transverse wound separate from each other. In some cases, indeed, as Richter observes, the apparatus seems rather to do harm. Children, to whom it proves exceedingly irkitome, are made refilts by it, so that they keep moving their tongue and jaw about, to the great irritation and disturbance of the wound.

Richter further objects to Pibrac’s bandage, that it is decidedly unneceffary; for, such motions of the tongue, as it directly refrains, namely, those forwards, or to either side,
TONGUE.

side, may be hindered by applying a bandage to the jaw, and making the patient refrain from talking and mastication. The same author affirms, that such treatment has answered as well as could be desired, in numerous cases, some of which were large transverse wounds in reflexes and unmanageable children. During the treatment, however, the patient is to be allowed only liquid nourishment, which must be imbibed through a tube.

Perhaps, however, on the whole, the propriety of employing a future must depend entirely on considerations of the following kind. When the transverse wound is deep, and extends quite across the dorsum of the tongue; when it is situated towards the apex, and is conveniently within reach; and when the patient is uncontrollable, and cannot be made to keep the tongue and lower jaw quiet; a future may be advantageous. On the other hand, when the wound is at the back part of the tongue, (a cafe by the bye which is unfrequent,) and a future must be difficult of application; when the wound is trivial, likely to heal of itself, and there is no risk of its occasioning any material chief in the part; and when the patient is docile, and attentive to the advice given him; the most judicious practice is to apply such a bandage as is recommended for the fractured jaw, and to forbid all motion of the tongue and lower jaw, by lacerating, masticating, &c. nothing but liquid food being allowed to be drunk through a tube.

If the wound should be too deep, as almost to separate the anterior part of the tongue from the rest of this organ, the remaining connection is not to be divided; but an endeavour made to bring about an union. There are numerous cafes on record, encouraging the practitioner to expect the best consequences from the attempt. Richter’s Anfangsgr. der Wundartz. b. iv. p. 26.

With regard to other circumstances, relating to wounds of the tongue, the treatment of these causes does not differ from that of wounds in general.

Bleeding from the Tongue.—An hæmorrhage from the nasal vessels sometimes follows accidental wounds, and surgical operations on the tongue. When it is an artery that bleeds, the accident may prove dangerous, and even fatal, especially in children, who, by moving the tongue and jaw about, and continually promoting, promote the hemorrhage, and render the adoption of the measures necessary for its suppreffion extremely difficult. As, in these cafes, a ligature, compression, and fyphtics, hardly admit of being applied, the bleeding cannot be stopped, without much trouble. Whether the nasal arteries can be tied in the manner fugged below, remains to be proved; but, certainly, they are rather too far out of reach to be tied in the common way. Nor can compression, as ordinarily performed, be trusted, since it operates against soft yielding parts, and not upon any fixed point. Strong fyphtics, even were they deemed worthy of trial, could not well be employed, since they would be apt to mix with the saliva, and be swallowed. Yet, there are some means, by which the most perilous bleedings of this sort have been stopped.

Among the most celebrated of these last methods is the actual cautery, which is preferred by several of the continental surgeons, and may, perhaps, in this solitary instance, seem almost justifiable to British surgeons, averse as they properly are to this barbarous practice.

Another plan is that of directing an affiant to keep a compress on the bleeding vessels, as long as necessary, with his finger; while, with his thumb, he takes care to make counterpressure under the jaw. M. Jourdain stopped a considerable hemorrhage from the nasal vessels, by laying a piece of ice under the tongue. M. Petit was the inventor of an apparatus for stopping such bleedings, which is at once simple, ingenious, and effectual. The surgeon is to get a piece of birch, and cut it through below the place where two branches of equal size unite. It is to be made to resemble a fort of fork, the prongs of which are to be about eight lines long, and the handle four. It is then to be covered all over with linen, and put under the tongue in such a way, that the end of the handle is to rest against the middle of the concavity of the arch of the jaw, while the prongs embrace the frenulum, and compress the bleeding vessels. The middle of a roller is next to be applied to the dorsum of the tongue, as far back as possible; and the ends, after crossing each other under the chin, are to be pinned to the child’s night-cap.

If a surgeon were to arouse these plans, or find them unavailing, there is yet one resource left, namely, that of cutting down to, and tying the trunk of the lingual artery, just where it passes over the cornu of the os hyoides.

Hæmorrhage from the nasal vessels occasionally arises quite independently of a wound. In one such example, the bleeding proceeded from a varicoæ vessel under the tongue, and was effectually stopped with the cautery. See Default’s Journ. de Chirurg.

Dangerous Enlargement of the Tongue from Inflammation.—Sometimes when this organ is infamed, it swells so prodigiously, that it protrudes between the teeth, entirely fills the cavity of the mouth, and obstructs speech, deglutition, and even respiration. In such a case, the most prompt affistance is demanded. Ordinary evacuations of blood, and other antiphlogistic meafures, here seldom bring relief with sufficient celerity. According to surgical authors, the most certain plan consists in making two longitudinal cuts along the edges of the dorsum of the tongue, from one to two inches in length. A copious bleeding generally follows, which soon brings about a diminution of the swelling. No troublesome confequences are to be apprehended from such incisions, which heal with ease, and scarcely leave any scar behind. De la Male, Mem. de l’Acad. de Chir. tom. v. Jourdain succeeded in affording prompt relief, by taking blood from one of the nasal veins. This method seems liable to no objection, except perhaps that of being difficult, when the tongue is enormously swelled. Traité des Maladies de la Bouche, &c.

In one example, the difeafe refified every means until a blister was applied to the throat. Richter’s Anfangsgr. band. iv. p. 29.

Some inflamations of the tongue have been observed to originate from the lodgement of foreign bodies in it, which ought to be extracted; as, for infiamae, a fish-bone, or a needle. (Jourdain, Traité des Mal. de la Bouche, &c.) Other caufes have arisen from the injudicious employment of mercury, and the excitement of a fudden and immoderate falivation. Many examples are connected with violent inflammation of the parts about the throat.

Sometimes inflammations of the tongue terminate in suppuration. Such abecfes rarely admit of being opened, and hardly allow the use of any means, except emollient gargles.

Cafes have occurred, in which inflammation of the tongue has induced mortification, and the loss of the greater part of this organ. The treatment of fuch infiammes must conform to the general rules delivered in the article Gan-grene.

When, in confequence of any enlargement of the tongue, or other difeafe in the mouth, the necfary food and medicines are, for a considerable time, prevented from being taken, they may be injected into the fomach through an elastic
elastick catheter, which is to be passed through one of the nostrils into the oesophagus. It has been recommended to have the outer end of the instrument to turn upward out of the nostril, and shaped like a funnel, whereby it is suppos'd fluids might be more conveniently introduced. (Libron, Journal de Médecine, tom. xxxiv.) But we do not consider this any material improvement, since all liquids may be easily injected with an elastick gum syringe, such as is used for injecting hydrocoele, without having the external end of the catheter made in the manner above suggested.

Ulcers, Indurations, and Tumours of the Tongue.—Ulcers on the tongue, of an exceedingly painful, obtinate, and malignant looking nature, are sometimes produced by the sharp or rough edge of a tooth. This mechanical kind of cause is easily detected on examination with the finger. If the tooth be found, the projection or roughness must be filed off; if it be curious, the best plan is to extract it. When these objects are accomplished, the sore usually heals without further trouble.

Some very obtinate ulcers, which originate on the tongue, and are connected with disorder of the digestive organs, may be cured by a long perseverance in the use of the antm. tart. exhibited alternately in small doses, and then in larger ones, so as to excite vomiting.

Ulcers, deriving the epithets malignant and cancerous, not unfrequently form on the tongue. Sometimes the malady, in its most incipient state, appears as a sore. Sometimes a circumscibed moveable, or immovable, feirrhous swelling is first observable, which gradually becomes painful, and ulcerates. In other instances, there is, in the beginning, only an induration in the substance of the tongue, without the smallest appearance of any swelling. The ulcers, under consideration, are always surrounded by hardness. They may make their first appearance either at the edges or at the apex of the tongue. In certain cases, the whole, or a large portion, of this organ is covered with numerous small feirrhous tubercles, which gradually fall into a state of ulceration. These we have seen greatly diminished by a gentle course of mercury. All the medicines, tried in other cases of cancer, may be exhibited in the present ones; but, on the whole, the timely employment of the knife merits the most confidence.

However, the following kinds of cases have yielded to particular remedies.

A malignant exceedingly painful ulcer on the tongue, surrounded with a good deal of inflammatory hardness, has been cured by the continued internal use of opium. The dose is to be gradually augmented; patients are flated to have taken, at last, eighteen grains in one day.

One species of malignant ulcer yields to the long continued exhibition of tartar emetic. The doses must be increased, in proportion to the time which elapses from the first taking of the medicine.

Very malignant and unyielding sores on the tongue are said to have been cured by repeatedly applying 
v
leeches to the under surface of this organ. Med. Comm. vol. ii.

It would be inexcusable to pass over in silence such ill
conditioned ulcers of the tongue, as originate during violent
follations. Sometimes similar sores, produced by the same
caufe, take place, at the same time, on the tonsils; and, in
this circumstance, inexperienced surgeons, or mistaken prac-
titioners, who are blinded with the fear of typhus, are very
apt to suppose the sores to be venereal ones. This error
leads to the free use of mercury; the sores frequently slough, and the patient's health becoming greatly deranged, he is thrown into a state of great peril. In this case, it is
hardly necessary to observe, that the use of mercury must
be immediately omitted, and the mouth very frequently
washed with a solution of alum.

Violent inflammations, followed by ulcerations of this
kind, are particularly apt to occur, when patients catch
cold, while they are under the influence of mercury.

For the removal of a cancerous portion of the tongue, a
blister is the best instrument; and the patient's mouth
should be kept open during the operation, by the interpo-
tion of something between the teeth. The hemorrhage is
generally what is most apprehended; but we have instances
related of large portions, and even of the anterior half of
the tongue, being amputated, and of the bleeding being
easily suppreffed, either by the actual cautery, or fome of
the ordinary means for the suppression of hemorrhage.

It appears to us, that a tolerably dexterous man might tie
the mouth of an artery in this situation, with the assistance
of two pair of forceps to tighten the ligature, when the noofe
has been put over the tenacula round the bleeding point.

Certainly, cancerous disfrees of the tongue may have ad-
avanced to such a degree, that an operation cannot be pru-
dently undertaken. The bleeding would be a serious objection; the whole deltemper of the tongue itself might
not be removable; and the contaminated state of the ad-
jaent lymphatic glands below the jaw, usually existing in
this advanced state of the malady, would, according to re-
ceived opinions, render a radical cure quite impracticable.

When the disease is not in the vicinity of the apex of the
tongue, the operator may find it difficult to draw the part
sufficiently forwards, and keep it in this position. In this
circumstance, surgical authors recommend the employment
of a pair of forceps for the purpofe, the blades of which are
fre to be covered with rag. Should this instrument be found
ineffectual, they advise the surgeon to use a pair of forceps,
the blades of which terminate in two short double hooks.

As being painful, one should always avoid, if possible, the
employment of such an instrument.

Here, as in all other cancerous cases, it is the duty of the
surgeon to take care that no point, suspected of parti-
pating in the disease, be left behind. Unless this maxim
be attended to, the operation will mostly be followed by a
relapse.

Abroad, surgeons have sometimes effected a cure by ap-
plying the cautery, notwithstanding the wound after the
operation had put on an unhealthy and fugal appearance.
(Journ. de Med. tom. xvii.) In this country, practi-
tioners might hope for similar success from the cautious
employment of caustic; for the revival of the cautery, under
any circumstances, is an idea now almost intolerable to every
British practitioner.

After the exition of a diseased portion of the tongue, local
applications cannot be very well used; nor are they
in general necessary, when the patient moves the part as
little as possible, and avoids putting stimulating food and
liquids into his mouth.

Cancerous portions of the tongue may also be extirpated,
by passing a double ligature through this organ, and firmly
tying one part of the ligature over each side of it.

This plan must be infinitely more painful, than the re-
moval of the diseased part with a knife. To the latter
method, the hemorrhage is the only objection; and, not-
withstanding all that has been said, we think no surgeon
ought to venture to cut away a diseased tongue, without
having first made up his mind respecting what method
should be adopted for stopping the bleeding.

When much of the tongue has been lost, there certainly
is reason to expect, that its functions will afterwards be
performed in a very imperfect manner. However, there
are
are on record several examples, in which the greater part of this organ was lost, and yet the patients retained the faculties of talking, malificating, swallowing, and articulating words, with considerable perfection. See Mem. Physiol. &c. for la Langue par M. Louis in Mem. de l'Acad. de Chr. tom. xiv.

The removal of sceilous and sarcomatous tumours of the tongue may be most conveniently accomplished with a secalpel and a tenaculum. Encysted swellings of this organ are generally of the melanies kind, and ought, if possible, to be diffused out, without opening the cyll at all.

Authors relate examples, in which the tongue has been of extraordinary magnitude, either in consequence of original malformation, or a peculiar fort of disease. Excepting the deformity, arising from the projection of the part out of the mouth, some of these patients experienced no particular inconvenience, as they could speak, malificate, and swallow tolerably well. Under such circumstances, the removal of the redundant portion would not be advisable; but if the disfigurement were combined with much inconvenience, the operation would be proper, especially as the cut part would be so forward in the mouth, that the bleeding vessels could be tied. First Lines of the Practice of Surgery, by S. Cooper, edit. 3.

Tongue-grafting. See Engrafting.

Tongue-tied, the popular name for a distemper of the tongue in children, when it is tied down too close to the bottom of the mouth, by a ligament connected all along its middle, and called its frenulum, which requires to be divided to give the tongue its proper motion.

This is sometimes the case in adults, but oftener in children, who cannot then exert their tongues to suck. This is, however, by no means so common as the women usually imagine; not so much as one child in a thousand being afflicted with it; nor is the operation in cutting it of little consequence, since often bad accidents follow it, and sometimes the loss of a child’s life. When the infant can put its tongue out of its mouth, the frenulum wants no incision; but when the tongue cannot be extended beyond the teeth, the operation is necessary.

To perform this, the end of the tongue should be covered with a linen rag, and held with the fingers to prevent its flipping, and the ligament of the tongue running between the ranular veins and internal salivary ducts, is to be divided by a pair of obtuse pointed scissors, till the goes room enough for sucking or speaking; but in doing this, great care must be taken not to wound the salivary ducts, or the proper veins and arteries of the tongue; for children have been known to perish upon the spot from cutting the ranular veins in this operation. Midwives often tear this ligament with their fingers as soon as the child is born; but this is a dangerous practice. Heilier. See Infants.

Tongue of Fish. All fih have either a perfect tongue, or the rudiments of one, in their mouth; but this organ is very different in the various species, in its figure, mobility, and other qualities and properties; as to the figure, it is in some pointed before, as in the eluce; in others it is rounded in this part, as the perch and clarie have it; and in others it is somewhat blid, as in the pike. In some it is smooth on the upper part; as in the gar, cyprinid, and mackarel; in others it is rough and dentated in this part, as in the salmon, mullet, &c. In many fih, the tongue is immovable, adhering firmly to the bottom of the mouth, as in the perch, cyprinid, and, indeed, in the greater part of fish; in others it is loose, as in the whale.

In the cetaceous fih, the tongue being loose, as in quadrupeds, it is used by the animal in the same manner; but in other fishes it is of no use in the moving of the food about in the mouth, nor is it the genuine organ of taste, being in many a cartilaginous substance, and therefore not proper for receiving the notices of that sense. The principal use of the tongue in these fishes seems to be in its serving as an assistent organ of swallowing, its being more elevated than the other parts of the mouth, rendering it fit for the toffing of the food down the throat. The true use of the tongue in those fishes which have it dentated is, that it serves to retain the prey from running out of the mouth, and afterwards in the swallowing of it; what renders them more fit for this use is, that they have always the prickles turning inwards. It is the opinion of Mr. Ray, that the tongues of the cartilaginous kinds have some sense of taste, and this is more probable, than that the more hard and rigid ones should have any such sense. Artedi de Pisci. See Fish.

Tongue of a Mouse. What is vulgarly called the tongue in this fish from its shape, is truly an organ, by means of which it spins a fort of threads in the manner of spiders or caterpillars, to fix itself to the rocks by. See Muscle.

Tongue, in the Manse. The aid of the tongue or voice, is a fort of agreeable clacking, or a certain sound formed by the cavalier, in striking his tongue against the roof of his mouth, when he means to animate the horfe, and fullain him, and make him work well in the managed. See Aid.

Tongue, To swallow the. A horfe is said to draw in, or swallow his tongue, when he turns it down his throat, which makes him wheeze as if he were short-winded. This fault is cured by giving him a bit with a liberty for the tongue.

Tongue, Serpent’s, in Botany. See Adder’s Tongue.


Tongue, in Maft-making, the taper part at the lower end of a pindle, or of a farl. In Rigging, a short piece of rope spliced into the upper part of landing-backfells, &c. to the fize of the top-mast-heads; it is ferved over with fpun-yarn, and its use is to keep them open to the fize of the main-heads.

Tongues, Confusion of. See Confusion.

Tongue, in Geography, a town of Scotland, on the north coast of the county of Sutherland, situated on a bay called the Kyle of Tongue. N. lat. 58° 27'. W. long. 4° 14'.

Tongue Island, a fmall ifland in the Mergui Archipelago. N. lat. 0° 52'.

Tongue. See South.

Tongue, NEMEW, a town of Birmah; 35 miles S. of Raynangong.

Tongue, a town of South America, in the province of Quíó; 20 miles E.N.E. of Riobamba.

Tongues, Tartars. See Tongues.

Tongh, a lake of Norway, in the province of Aggerhus; 55 miles N.W. of Christiania.

Tonia, a small ifland in the St. Lawrence. N. lat. 44° 30'. W. long. 75° 53'.

Tonic, formed from tón, to stretch, in Medicine, is applied to a certain motion of the muscles, in which the fibres being extended, continue their extension in such manner, as that the part seems immovable, though in reality it be in motion. See Muscle.

Such is the cafe of a man flanding, of birds planing or swimming through the air, &c. Galen says, that the muscles act even when at rest; for after having made any contraction to fix themselves in a certain state or disposition, the preferring of that contraction is what we call the tonic motion.

Tonic, in Music. See Genus.

Tonic Accent. See Accent.

TONICAL Echo. See Echo.

TONICHI,
TONICHJ, in Geography, a town of New Mexico, in the province of Higuas; 25 miles N. of Rosichio.

TONIKKY, an island in the East Indian ocean, near the north coast of Celebes. N. lat. 5° 51'. E. long. 99° 37'.

TONINA, in Botany, an unexplained name of Aublet's.

TONIQUE, in French Music, is equal to key-note in English music, or the principal found of a composition which generates all the rest.

TONISKA, in Geography, a town of Russia, in the government of Irkutsk: 46 miles E.S.E. of Sertuchik.

TONKER. See Lassa.

TONKER-SONG, a town of Thibet; 524 miles E. of Lhasa. N. lat. 23° 57'. E. long. 95° 40'.

TONKEY, in Agrimetry, a term provisionally made use of to signify short-legged and deep-carcassed, as is the case in the Chinese breed of swine. It is consequently a term sometimes applied to such breed of swine. See SWINE.

TONKIN, in Geography. See TONQUIN.

TONNA, See TANNA.

TONNAGE, the weight of goods carried in a boat; also, the water, tolls, or sums per ton, per mile, or otherwise, which are payable to the proprietors of the navigation for the liberty of using the same. See TUNNAGE.

TONNAGE, Duty of. See DUTY.

TONNAGE, in Ship-building, the cubical content, or burthen, of a ship in tons; which is commonly estimated by a given rule not answering the above purpose, but producing what is designated the builder's tonnage. The real burthen a ship is to carry, when brought down in the water to the loadline and water intended in the construction, may be nearly found by the rules given in the article SHIP-BUILDING (TONnage or BURTHEN). See also BURDEN OF A SHIP.

The word is derived from a ton, or weight of water equal to 2000 pounds; for it appears that, anciently, a cubic foot of water, weighing 62.4 pounds, was assumed as a general standard for liquids. This cubic foot, multiplied by 32, gives 624, the original weight of a ton. Hence eight cubic feet of water made a heaped ton, and four heaped tons, in capacity and denomination as well as weight.

TONNAGHAN, or DONAGHAN, in Geography, a river of Canada which runs into lake Superior, on the side of which is found a quantity of virgin copper.

TONNAY-BOUTONNE, a town of France, in the department of the Lower Charente; 10 miles W. of Rochefort.

TONNAY-CHARENTE, a town of France, in the department of the Lower Charentes; 5 miles E. of Rochefort.

TONNEAU, in Commerce, a measure of capacity in many parts of Germany, both for wine and dry commodities. The tonneau, as a measure for corn, contains 8 scheffels, or 92 viertels, 100 of which tonneaux yield about 29 English quarters. A tonneau of beer consists of 178 quarters, or 25 English beer gallons. At Koningsberg, a last contains 24 tonneaux, 564 new scheffels, 60 old drits, 240 viollets, or 960 metzgers. A new scheffel contains 510 English cubic inches, and 25 scheffels = 65 English bushels nearly, and 20 Koningsberg lasts = 295 English quarters. The last of Spanish and French salt is reckoned at 18 tonneaux, or 6600 lbs.; the last of earrings at 12 tons; a last of green marbled soap at 5 tonneaux, or 62 viertels. See TEN.

TONNEAT, a corn measure in some parts of France.—Also, a weight of 2000 lbs. French, by which the burden of ships is reckoned.—Also, a general term in France for a cake.

TONNEINS, in Geography, a town of France, and principal place of a district, in the department of the Loir and Cherene; 14° 40' S.E. of Bourdeaux. N. lat. 44° 52'. E. long. 1° 30'.

TONNERRE, a town of France, and principal place of a district, in the department of the Yonne; 10 miles E.N.E. of Auxerre. N. lat. 47° 51'. E. long. 4° 50'.

TONNERRE, a mountain of France, which gives name to a department; 15 miles N.W. of Corbeil.

TONNING. See TUNNING.

TONNINGEN, in Geography, a seaport town of Denmark, in the district of Skodsborg, situated on a peninsula, formed by the Eider. In the year 1613, the harbour was enlarged and repaired at a considerable expense; but in 1679, during the war with Sweden, the duke, pursuant to the treaty of Rendsberg, was obliged to close this town to the king, who ceased the fortifications of it to be demolished. But when the dukedom recovered the town in the year 1679, they were repaired, and improved with additional works; so that when king Frederick IV. believed it, he was not able to make himself master of it. In the year 1719, the Swedes were obliged to surrender themselves prisoners of war to Denmark; and in the year 1744, the king having got possession of the town, the fortifications were demolished a second time. Tonningen has been in a defenceless condition ever since that time. It had once a noble castle, but that was likewise demolished by the king's orders, in the year 1734; 57 miles N.N.W. of Hamburgh. N. lat. 52° 23'. E. long. 6° 00'.

TONNOMAIA, one of the smaller Friendly islands; 11 miles S. of Amamooka.

TONO, a town of Chili; 70 miles S. of St. Yago de la Nouvelle Espiruadura.

TONON. See THONON.

TONORUM, in Ancient History. Roman cities, though not constantly accompanied by a flute, had their voices frequently regulated by an instrument which Quinctillian calls a sonarium. Cicero, a fidelis, and Plutarch, supplicem, or harmonium, which is the same thing; and this instrument served as a kind of pitch-pipe. Both Cicero (De Orat. lib. iii.) and Plutarch (In Vit. C. Gracch.) relate the well-known story of the voice of the famous tribune, Caicus Gracchus, being brought down to its natural pitch, after he had left it in a transport of passion, by means of a servant placed behind him with one of these instruments. Cicero tells us that this tribune, with his finger, qui sine locutio post ipsum, and was not seen by the people, does not confine his employment to appeasing the passion of his master: he was, upon occasion, to incite it: "Qui instinet cordis suscitant, quo ille amat rem, ut el Nord imperialism, ut suae consistat evocatet."

TOSOS, a word used by Hippocrates, to express in general any nerve, whether arising from the brain or spinal marrow. It is also used to express a tension in any part.

TONOSA, in Ancient Geography, a town of Asia, situated on the river Mius, W. of Godasa.

TONOSA, or TUNOS, a town of Asia, in Cappadocia, on the route from Seleucia to Corisoum, between Sebasthe and Arabia. Anton. Iun.

TONOUHWAH, in Geography, a kingdom of Africa. S. of the Niger, the capital of which is Affricus (the Affricus of D'Anville), situated midway between Kantepe, a dependency of the kingdom of Tonouwa; and the sea-coast: that is, about eighteen days' journey from each. It is said that there is no communication between this coast (probably the Gold Coast) and the country of Garjah; at the king of Affricus;
Allentai, who poises the intervening space, prohibits his inland neighbours from passing through his country. On the other hand, a gentleman (Mr. Norris) who resided many years in Whydah, says, that there are other states (that is, the Fantees, and their confederates) lying between Allentai and the sea; and that the Allentais have often attempted, but without success, to open a communication with the coast, from that part of the Niger which forms the southern limit of the great empire of Calhina. In the kingdom of Tonou-wah, which is said to border on the coast of the Christians, and of which, as we have said, Allentai, or Allentaté, is the capital, a succession of hills, among which are mountains of a stupendous height, diversifies, or constitutes the general face of the country. Some of the lands are cleared, but other districts are still incumbered with woods of a vast extent; and though for the most part the highlands are pastoral by innumerable flocks of sheep, and by herds of cows and goats, and the vales exhibit the captivating view of succulent vales, encompassed with corn and rice, and fruits of various kinds, yet these are places of native fertility and eternal barn-sacks.

TONQUIN, or Tonquin, signifying "the Court of the East," because when this country was a province of China, it was the imperial residence; though, with regard to its position with respect to China, it should rather be called "the Court of the West," and denominated by the natives An-nam, Anam, or Ngan-nan, i.e. the repose of the fourth, is separated from Cochin-china by a small river, and may now be considered as incorporated with it by conquest. It is bounded on the E. and N. by China, on the S. by Cochin-china, on the W. by the kingdoms of Laos and Boas, the latter being unknown to geographers. Tonquin may be regarded as consisting of eleven provinces; that of the North being the largest; its boundaries being Laos on the W., China on the N. and E., and Boas on the N.W. With regard to its aspect and surface, it may be divided into two portions, the mountains and the plain. Towards China, Cochinchina, and Laos, the mountains are extensive, but neither rocky nor precipitous; and they are partly covered with forests. In this part are found mines of gold, silver, and iron, and also of copper, which is in high estimation. The lower part of Tonquin much resembles Holland, being partly land and partly water, and intersected by canals and dykes, and also by numerous rivers and lakes. The province denominated "of the West" is watered by seven great rivers, which unite about fifteen leagues above the royal city, and form a kind of sea, or large lake, which sends out various branches. The southern part of the kingdom, though in the torrid zone, superabounds with waters covered with boats. A navigable river, called Songkoy, traverses the kingdom from N. to S., and receives various streams, which are also partly navigable; and canals which serve for the cultivation of rice are numerous. The rivers of Tonquin rise from the mountains of Yunnan, and in the rainy season, from May to September, inundate the adjacent country. The chief of these is the Holy Kian, which, after receiving the Li-fien, passes by Kecho the capital. The population of this country is said to be considerable. Although it has but few towns, it has several villages which contain many inhabitants. The capital of the kingdom and royal residence is Kecho, Kecho, or Kefo (which see). The next remarkable town is Hean, containing about 2000 houses, situated on the right bank of the river, at the distance of four or five days from its entrance into the sea. Formerly the French had a factory in this place, and the trade was considerable. (See Hean.) At the distance of five or six leagues from the mouth of the river is another town, called Domea, much less than Hean. These towns, as well as most of the villages, and some houses belonging to persons of wealth, are surrounded with live hedges of bamboo; and to the houses and gardens are annexed alleys of areca trees, which exhibit a picturesque appearance. The high roads, which are scarcely passable in the wet season, are maintained at the public expense. The rich rail horfes, or litters carried by men. In the mountains the houses are differed, and the people almost savage. The chief product of agriculture is rice, which affords two harvests annually in the low country, but in the high lands only one. The rivers and canals abound with fish of various kinds: wheat and rice are unknown: the mulberry-tree is common: silk is in general use among the poorer people; the sugar-cane is indigenous, but the art of refining the juice is unknown. The plough used in agriculture, consists of three pieces of wood, a pole, a handle, and a third piece, almost at right angles with the last, for opening the ground, and they are simply fixed with straps of leather: this plough is drawn by oxen or buffaloes. The horses are small, but lively and robust: but they are little used, as the inhabitants prefer travelling by water. Horses and sheep are unknown; goats are few, and swine abundant. The people eat dogs, cats, and rats: poultry, ducks, and geese abound, and are found wild in the forests. The eggs of ducks are heated in ovens, and produce young, which swarm on the canals and ponds. The forests contain deer, hogs, peacocks, a peculiar kind of partridge, and quails. The tigers are large and destructive; one of which is said to have entered a town, and to have destroyed eighty-five people. The wild elephants are also very dangerous: apes are found in these forests, and some of them of large size: thefe and the parrots are not a little destructive of the rice and fruits. The manners of the people are very highly civilized than those of the Chinefe: they are in general of middle stature, with broad faces, not so flat as those of the Chinefe; and, in some particular points, they are much finer than the Chinese. The men have long hair, and do not shave. Few of the people are deformed, and the women are rather handsome. The complexion of people of rank approaches that of the Portuguese and Spaniards. At the age of seventeen or eighteen they begin to blacken their teeth, regarding white teeth as the praise of dogs; like the Chinese, the fashion of shaving their heads and faces is restricted to the Mandarins, the men of letters, and other distinguished persons. The ladies drape their heads with red, and sometimes their hands and feet. The dress of the men consists of a piece of silk, several yards long, wrapped about the loins, and a long robe with loose sleeves, thrown off in travelling or during labour. The women of the lower orders are modestly clothed in a long petticoat, and one or more robes like those of the men. They cover their bosoms with a piece of linen of silk in form of a heart: they use ear-rings and bracelets of gold or silver. They commonly appear with naked legs and feet, like the men; but the rich and persons of dignity wear long drawers. The most general colour of the silk and linen is white. Black is only worn by persons of distinction. The men and women fasten their hair behind in a knot; but in the presence of a superior they let it fall, in token of respect.

The people are indolent, and loaded with heavy taxes. The public services required from them occupy about six months in the year. The learned language in Tonquin is that of China, but it degenersates into a kind of dialect which cannot be understood by a Chinefe, and the words are all in single syllables, and expressing different things according to the accents and mode of enunciation. The language of Tonquin, and also of Cochin-china, called
the Anam language, says Dr. Leyden, is simple, original, and monosyllabic. It has little affinity to the Mandarin or court language of China, to that of Canton, to the copious polysyllabic and inflected Japanese, or to any other of the Indo-Chinese languages. Barrow, in his voyage to Cochinchina, seems to consider it as a derivative from the Chinese; but Dr. Leyden perceives no similarity between the Chinese and Anam, unless that they are both monosyllabic languages, and that the signification of terms is regulated, as a great measure, by their accentuation. But though the same monosyllables occur, and though they are also accented frequently in a similar manner, yet even in this case, the signification of these monosyllables is for the most part totally different. In the syntax or construction of the two languages, there is also a very great difference. The Anam language has neither genders, numbers, nor cases, moods, tenses, nor conjugations; all which are supplied by the use of particles and the juxtaposition of words, as in the other monosyllabic languages. The same word has often the signification of both a noun and a verb, and its particular use, in such a case, is to be determined by the context, and the collocation of words in the sentence. The principles of collocation in sentences are equally simple as in the other monosyllabic languages; many usages of which are specified by Dr. Leyden. The accents in the Anam tongue are of such indispensable utility, that they have been very properly termed the soul of the language, while the primary monosyllables, varied by accent, have been made to represent its body. The Anam style is sometimes highly bold and figurative, and attains a degree of animation which is not very common among the Indo-Chinese nations of the continent. The ancient code of Tonquin laws possessed great celebrity, and was highly venerated previous to the conquest of that country by the Cochinchinese. It is represented by the missionary Le Roy, as composed in the most elevated style of Chinese, and full of uncommon modes of expression. He also mentions, that it was printed with an Anam translation, composed by an ancient Tonquin Mandarin. The religion of the Anam nation is a modification of the Buddhist system, nearly resembling that which prevails in China. Many local and peculiar superstitions, however, are blended with it, such as the worship of the dog and tiger, to the altar of which human sacrifice, and to the second, human flesh is offered. Traces of this worship are found among the mountaineers on the borders of India, as well as in the proper Indo-Chinese countries. There the tiger is worshipped by the Haji tribe, in the vicinity of the Garraw or Garadas.

The Quau-no, an ancient race, as the genealogies, who inhabit Kaubang, or the mountainous range which divides the Anam countries from China, regard themselves as the original inhabitants of Tonquin and Cochinchina, and consider the Anam as a Chinese colony. The Quau-no have a peculiar language, and write with a style, on the leaves of a plant, termed in Anam "jwaa." The Moi and Muong are also mountaineer tribes, who speak languages different from the Anam; but it is hitherto unknown, whether they are original races, or only branches of the Quau-no. Aatific References, vol. x.

Marriage is contracted without priest or ceremony, the consent of the parents forming the only ceremony. The husband may repudiate or sell his wife, but the wife cannot leave her husband without his consent. The right of primogeniture predominates, and daughters derive little benefit from the estate of their father. Polygamy is common; divorces are rare: children are not exposed as in China. The inhumanity of creditors equals that of ancient Rome, and the accumulation of usury renders the state of debtors very perilous. An abominable and cruel custom prevails, which is that of putting some peculiars death at the beginning of a new year, and with this view they poison the fowls and fruit which are brought to market: examples of this horrid practice, which, it is thought, will secure them good fortune, are frequent, but the punishment is rare. The chief amusements are plays, dances, and cock-fighting. The general food is rice, and pulse is also in request. The nets of a species of swallow are also held here, as well as in China, in great esteem. The chief drink is derived from a kind of coastal tea, but arrack is also much prized.

The climate of Tonquin is not very hot. From the month of September till March, it is temperate and healthy; in January and February the weather is cold, but neither snow nor ice is seen, and hail is very rare; the temperature of the air becomes rather insalubrious in the months of April, May, and June, which is the season of fogs and heavy rains; and great heat is felt in July and August. In the first country, and on part of the mountains, the winds regularly blow six months from the N. and six from the S., the first beginning in November. Among the aversions of this country, the most grievous is a kind of leprosy, which devours the extremities of the hands and feet. The funeral ceremonies resemble those of China: pieces of gold or silver, or small pearls, are put into the mouths of the dead, that they may not enter poor into another world. Their religion resembles that of the Chinese, but the sect of Foo is most regarded. Every town or village has a tutelary genius. Sometimes the supposed genie is a vile animal, as serpents, dogs, cats, oxen, fish: but more frequently men, who have defiled well of their country. The natives are not a little addicted to magic. The sciences, like those in China, are chiefly sought in the writings of Confucius and his commentators; the principal branches being morality, mathematics, physics, and astronomy, with the history and laws of the country. Knowledge is highly esteemed; and the men of letters are regarded as the pride of the kingdom. All the offices and dignities of the state are the consequence of literary merit. Printing is known here, as in China; but painting and sculpture are in a low state. The chief trade is with China, which supplies Tonquin with fine teas, porcelain, silks, and painted linens, prepared sugars, wheat and barley, flours, kitchen utensils, iron, spades, fish and birds, wax, cotton, gists, and toys. Strangers export from Tonquin vanilla, silk raw or wrought, chiefly strong fruits, beautiful cloth resembling linen, made of the bark of trees, different works of mother of pearl, ebony, ivory, tortoiseshell, cinnamon, copper, cotton, and several other articles. Calamine is also exported from Tonquin by the Dutch and carried to Japan, where it is sifted in the manufacture of brass. The interior commerce of Tonquin is considerable, consisting chiefly of fruits of different kinds, silk and cotton cloths, with those made of the inner bark of the paper-bearing mulberry. The cinnamon, duly cultivated, would be valuable. The trees that produce this vanilla fulfill a juice refishing tartar, and the quantity is increased by incisions. Sugar might form a considerable article, if the people knew how to prepare it. Paper, made of the bamboo, mulberry, elm, cotton-tree, and all kinds of white and happy wood, is a considerable article. Silk procured from the sea, is a commodity of great demand in the interior of the country. The troops of Tonquin amount to about 120,000, of which about 6000 or 8000 are cavalry. Elephants were formerly used in war, but the introduction of firearms has diminished their number. Since the revolution in Cochinchina, when the Chowa rendered himself independent,
TONG. TON.

p resident of Tonquin, and assumed the royal title, a body of 10,000 men has been stationed on that frontier. Every governor of a province has at his dispose 700 men and an elephant. The remaining force, amounting to about 100,000, is placed in the royal city, or in an adjacent camp.

The arms of the Tonquinese are the ancient musket fired with a match, the modern firelock being unknown there, bows, sabres, pikes and half-pikes, and a defensive buckler. The troops of the king's household, which are reckoned among the best troops of the East, are clothed in blue and red. The navy amounts to about two or three hundred galleys, navigated with oars, and fitter for the rivers of the country than for the open sea. The king of Tonquin is reckoned among the rich sovereigns of the East, as he possesses valuable treasures and an ample revenue, derived from rice, a tax upon land, a capitation tax, the sale of dignities, and the duties on merchant-veffels, amounting to about one-tenth of the merchandise. The laws of Tonquin, like those of China, are founded on the simple principle of paternal authority and filial obedience. The magistrates are denominated Mandarins, from the Portuguese mandar, to command, by the Europeans; but in the native languages both of China and Tonquin, the appellation is "Quan." The tenure of lands and right of inheritance are respected even by the sovereign; and the succeffions in land are determined by one tribunal, and that of houfes and personal property by another. The judges are corrupt, and justice is fole. The military and civil offices are venal. Executions are rare, not exceeding through the whole kingdom twenty or thirty in a year. Decapitation is counted ignominious: princes and perfons of rank have the privilege of ftrangulation. Female criminals are trampl'd to death by elephants. The dignity of public executioner is hereditary. Other punishments are exile, perpetual imprisonment, and personal chattelment, fometimes with the mutilation of a finger or ear. The prizes are paid to be in a shocking state. On a general view of Tonquin, the country and the defpot are extremely rich, and the people are very poor. The Jefuits, soon after the commencement of the 17th century, made an attempt to introduce into this country the Christian faith; but their efforts have not been very fucceflful; feveral illufces having occurred of the perfecution of Christians.

In the gulf of Tonquin there is a small isle, which is faid to afford the mulk animal; and in the vicinity is a pearl fishery. The chief entrance of the river, called Dometa by the Europeans, is obstructed by a bar, and requires the guidance of a native pilot. In this gulf, as well as the adjacent Chinefe sea, the "tufoons," or "typhons," are tremendous. They are preceded by very fine weather; a prefaging cloud appears in the N.E. black near the horizon, edged with copper-colour on the upper part, fading into a glaring white. It often exhibits a ghastly appearance twelve hours before the typhon bursts; its rage lasts many hours from the N.E., attended with dreadful claps of thunder, large and frequent flatches of lightning, and exccfive hard rains; then it roars into a dead calm, after which it begins again with redoubled rage from the S.W., and continues for an equal length of time. Abbé Richard's compilation from the papers of the abbé St. Phalle, a misfionary in Tonquin for twelve years, who died at Paris in 1766; cited by Mr. Pinkerton, in his Geography, vol. ii. For an account of the revolutions in Tonquin from the earliest period of historical account, see Grofer's China, vol. i.

TONQUIN Bean, in Botany, sometimes called Tong Bean, is the seed of DIPTERYX odorata. See that article.

TONQUIN Medicine. See HYDROPHOBIA.

TONS de l'Eglife, Fr.; Twni ecclesidlicii, Itai.; the ecclesiastical modes or tones in canto fermo. See PLEN-CHANT, CANTO FERMO; and ECCLESIASTICAL MODES, AUTHENTIC and PLagal.

For the history of the establishment of the modes at Milan and at Rome, see St. AMBROSE and St. GREGORY.

The modes of the Roman church are eight: four authentic, and four plagal. The four authentic, or principal, are the odd numbers: 1st, 3rd, 5th, and 7th; the plagal are the even numbers: 2nd, 4th, 6th, and 8th; which answer to D and A minor, and C and D major, for the authentic; and G and A minor, and F and G major, for the plagal. These are defcribed by Dr. Pepusch, Padre Martini, and Roufeau, and all their feveral fcales may be seen in Burney's General History of Music, vol. ii.

We have drawn out the fcales of all the eight modes or tones acending and defcending (see Plates of Music), by which it will appear from the imperfection of these fcales in most of the tones, that they are only capable of melody; and all the common fervice of Roman Catholic churches, when the priests perform the duty without the afliftance of profefled musicians, no harmony is attempted to be given to mere canto fermo. In cathedrals, the motets and parts of the mas are sung by choirmen and children, as the anthems and fervices are in our cathedrals.

Notwithstanding the imperfection of the fcales, and little variety of keys in the ecclesiastical chants, secular music seems for many ages to have had no other rules, but to have been chiefly confined to a few keys in the diatonic genus, without the liberty of transpoftions. Hence came the timorous pedantry of excluding all other keys and fcales but thofe used in the church; which kept every kind of melody meagre and infipid, and in fubjeftion to the rules of ecclesiastical chanting. For it appears, that the only major keys used in canto fermo are C and its two fifts F and G; and the only minor keys A, E, and D. And in four of these keys the fcale is deficient, as there is no feventh or notefifte to G, A, or D. This accounts for fo small a number of the twenty-four keys which the general fytem and fcale of modern music furnifhes, having been ufed by the old compoferf; as well as for the temperament of the organs by which these modes were afterwards accompanied. And as all music in parts feems, for many ages after the firft attempts at counterfop, to have been compofed for the service of religion upon canto fermo and its principles; it likewise accounts for the long infancy and childhood of the art, till it broke loofe from the trammels of the church, by which it was bound in Gothic times; and by the cultivation of the musical drama sacred and fecular, the ideas of compoferf were enlarged, and the talents of performers improved by new exerfions, which brought the art nearer perfection during the two lat! centuries, than it had attained in feven hundred years from the time of Guido.

In implicit and religious obedience to the laws of canto fermo, no accidental flat or sharp was ever to appear; all the eight tones being rigidly in the diatonic genus in the keys of C and A natural, with no other femitones than from E to F, and B to C. When the fcales of these tones are drawn out at full length, they feem nothing more than different fpecies of octavc.

All these fcales defcending, might, however, be made perfecf by a fingle flat or sharp at the clef: as the firft tone by a flat, the third by a sharp. The 2d is perfect, defcending; the 4th wants a sharp or two at the clef to determine it to be in the key of E or B minor. A flat would make the 5th complete in the key of F; and a sharp the 7th in that of G. The
G. The 6th is in the key of C natural, ascending complete; and with a flat to B in the key of F, descendent; the 8th with one sharp would be in G, and with two sharps in D major. But these were licences which no one thought of, or at least had the courage to practice, till counterpoint began to gain ground. And even then, the mufica fina, or falle music, as that in transposed keys was called, no one dared to write till lately. Even the orthodox and good Padre Martini, at length vanquished his fears of the impropriety of using an accidental flat or sharp in the inward parts of canto fermo.

Lorentz, author of the famous Spanish treatise called "El por de la Mufica," without which Germanians made Dr. Worgan believe it impossible for any one to understand counterpoint, has written the scales of the eight tones as we have done; but has not ventured to harmonize them, as accidental sharps and flats must have been expressed or understood in the additional parts.

TONSA, in Geography, a river of European Turkey, which runs into the Mariza, near Adrianople.

TONSE, among the Romans, the blades of oars, or that part of them which beats against the water.

TONSBerg, in Geography, a city or town in Norway, in the province of Agderhus, situated on a bay of the Baltic; built upwards of 800 years since. It formerly contained nine churches, but now has only two. The inhabitants carry on a considerable trade in furs and butter. In the year 1536, it was laid in ashes by the Swedes, since which, it has greatly declined; 42 miles S. of Christiania. N. lat. 59° 23'; E. long. 10° 12'.

TONSELLA, in Botany, a name made by Schreber, out of the Pontea of Aulbert, which is itself taken from the Caribbean appellation of the same shrub, Rassona-tonella. Schreber perhaps meant to give the word a classical air, by approaching it either to Tonfa, an oar, or Tonfella, a mooring post, or a cable, for which indeed there seems no foundation in any recorded use of the plant. Possibly he might have in view tonella, a word applied to the box, or other trees fit for chopping. This idea is, however, no less applicable to our Tonfella than to the former.—Schreyl. Gen. 34. Willd. Sp. pl. v. 1. 192. Vahl. Enum. v. 2. 29. Mart. Mill. Dig. v. 4. (Tonselea; Aubl. Guian. v. 1. 31. Jull. 436. Lamarck Illistr. t. 26.)—Clads and order, Triandra Monogynia. Nat. Ord. uncertain, Jull.—It seems akin to Eunymus, and therefore probably belongs to his Rhamn. Gen. Ch. Cal. Perianth inferior, of one leaf, bell-shaped, permanent, in five deep, ovate, acute segments. Cor. Petals five, ovate, thick, permanent, longer than the calyx, inserted into the receptacle. Nectary cup-shaped, entire, surrounding the german. Stam. Filaments three, thread-shaped, reflexed, inserted into the inside of the nectary, rather shorter than the petals; anthers roundish. Fil. German superior, roundish, surrounded by the nectary; style cylindrical, shorter than the filaments; stigma simple. Peric. Berry spherical, seated on the permanent calyx and corolla, of one cell. Seeds four.


Obs. Jullien appears to have been underrated about the natural affinity of this genus, from having preconceived the germes to be inferior, which it purely is not.

1. T. fiscandens. Climbing Tonfella. Willd. n. 1. Vahl. Symb. v. 2. 17? (T. fiscabra; Vahl. Enum. n. 1. Tonselea fiscandens; Aubl. Guian. 31. t. 10.)—Leaves pointed, entire. Branches round, warty.—Gathered by Aublet in the forests of Guiana, near the river of Sinemari, thirty leagues above its mouth; flowering in October.—Von Rohr is said to have found the same in the island of Trinidad. The former terms it a shrub, climbing to the tops of the loftiest trees, and covering them with its opposite, repeatedly compound branches, which at length become pendant, even to the ground. In his own specimen before us they are slender, round, covered with minute warts burrowing through the cuticle, and bear several short opposite florets, leath at the extremity. We find no sign of hairiness. The leaves are opposite, on thick, channelled, smooth stalks elliptical, entire, two or three inches long, with a short blunt point; they are smooth on both sides, coriaceous, rather thinning, with one rib, and many reticulated veins. Flowers green, very small, about the ends of the branches, in partly terminal, partly axillary, small clusters, whose partial stalks are opposite.

Vahl describes the plant of Von Rohr as a tree, whose branches have a purplish roughish bark, and are hairy in their upper part. The branches are roughish on both sides; their veins villous at the back. Flower-stalks downy. Calyx and petal hoary; the latter fringed. We have been so speci- 

2. T. angustif. Toothed African Tonfella. Willd. n. 2. Vahl. n. 3.—Leaves oblong, with glandular teeth.—Native of Guinea. Similar to T. scandens, but different, having smaller and obtuse leaves, furnished with very dilatant glandular teeth; a larger corolla, and terminal anthers. Berry, according to Vahl, the size of an apricot, smooth, orange-coloured, globular with three flight angles, and from six to ten seeds.

3. T. angulif. Entire-leafed African Tonfells. —Leaves pointed, entire. Branches angular, smooth.—Brought from Sierra Leone, by prof. Gervis. The dried specimens are of a peculiarly fresh light green, and quite smooth. Branches with four, not very prominent, angles, slender and wavy. Leaves two and a half inches long, elliptical, with a linear blunt point, quite entire, veiny. Flowers small, green, in small, axillary, twisted tufts, whose common stalks, like the footstalks, are about a quarter of an inch long. Fruit the size of a pea, apparently a tough-coated berry.

4. T. decussata. Crooked-branched Tonfella. Vahl. n. 2. (Anthodon decussatum; Fl. Peruv. v. 1. 453. t. 74. f. 1.)—Leaves oblong-ovate, obtusely serrated, poliished. Filaments forked.—Native of woods upon the Andes. A shrub, with crooked greenish copious branches; purplish when young. Leaves pointed, smooth on both sides, or twisted stalks. Flower-stalks opposite, square, shorter than the leaves, compound, forked. Flowers small, yellow. Fruit unknown, but the affinity of the plant to T. angustif. has induced Vahl to place it in the same genus.

5. T. senegalensis. —Senegal Tonfella. Vahl. n. 4. (Hippocratea senegalensis; Lamarck Illistr. v. 1. 101.)—Leaves oblong, pointed, smooth, poliished; serrated towards the extremity. Stalks crowded, single-flowered. Branches rough.—Native of Senegal. Branches alternate, delicate of hairiness. Leaves about an inch long, with a bluntish point, half as long as the nail, their margins obscurely serrated, and appearing under a magnifier to be bordered with a yellow thickened line. Flower-stalks capillary, about half an inch long, numerous, from a short axillary tube. Petals linear, smooth.
polished, nearly entire. 'Stalks crowded, single-flowered. Branches rough.'—Native of Madagascar, as the unchristian name, which ought to have been changed, implies. The branches are said to be opposite, leprous, but not downy nor hairy. Leaves an inch and half long, or somewhat more, rather coriaceous, sometimes slightly toothed towards the end. Flower-stalks very numerous, from each axillary tubercle. Flowers drooping, smooth. Petals linear.

7. T. multiflora. Many-flowered Tonfella. Vahl, n. 6. (Hippeastrum multiflora; Lamarck Illust. v. 1. 101. H. obovata; Richard Ag. Soc. Hist. Nat. Paris. v. 1. 106.)—'Leaves obovate, entire, polished. Stalks crowded, each bearing two or three flowers.'—Found by Richard in Cayenne. Branches opposite, smooth. Leaves three or four inches long, sometimes oblong-ovate, very smooth, deltiform of veins. Flower-stalks numerous, scarcely half an inch long, each divided into two or three simple partial stalks, about the same length, with minute bractæ at the base of each. Petals oblong, smooth. The fruit of these three half plants has not been examined, but Vahl was induced, as in the similar cafe of our fourth species, to remove them blither, on account of their very close affinity to T. africana.

The author just mentioned considers this genus as very nearly related to the Linnaean Salacia, see that article. This opinion is extremely probable, and if it be correct, the name of Tonfella must give place to Salacia. In the habit of the plants we find no grounds for any distinction.

TONSET, in Geography, a town of Norway, in the province of Agderhus; 143 miles N. of Christiania.

TONSILS, in Anatomy, the glandular bodies, also called from their size and shape amygdale, placed at the pассив from the mouth to the pharynx. See DEGLUTITION.

TONSILS, Difeased, and Extirpation of. The tonsils are exceedingly liable to inflame; and sometimes the swelling thus produced is so great as to obstruct deglutition and respiration in a very dangerous degree. Prompt succour is now most urgently required; and relief may commonly be obtained by lacerating the enlarged tonsils, and promoting the bleeding with warm gurgles.

This operation may be done with an ordinary lancet, or with a broad one contained in a sheath, and constructed so that its point can only be pushed out to a certain distance. Pharyngotomus is the name usually given to this instrument. Abscesses in the tonsils are also to be opened, when the swelling causes serious inconvenience.

When lacerations cannot be made, the best means are venefication, applying leeches to the throat, exhibiting mercurial medicines, inhaling the steam of hot water, and using proper gargles.

Abscesses of the tonsils have been observed of considerable extent, not burting in the mouth, as is usual, but in the Enforthian tube, or even the maxus auditorius externus, attended with caries of the mitoad procés, deafness, and fissula. Such cases are frequently incurable.

The tonsils sometimes become enlarged, without being inflamed. This swelling is improperly termed febrifous. The glands are only swollen and of moderate firmness. A portion of a tonsil, thus enlarged, may be cut off, without the least danger of the rest assuming a malignant nature. This preternatural swelling of the tonsils is mostly owing to repeated inflammations. Sometimes there is no palpable cause. The malady is constantly free from pain. When the tumefaction is considerable, it obstructs the speech, deglutition, and respiration.

Diurent and astringent applications here prove ineffectual. The tumour admits of being removed; but it is unnecessary and improper to take away the whole tonsil, as a dangerous and even fatal haemorrhage might be the consequence. Only so much of the swelling should be removed, as is sufficient to afford relief. The remaining portion in general heals, without the least difficulty; a clear proof that the discharge is not of a malignant nor cancerous nature.

The extirpation of a part of a tonsil, thus diseased, has been accomplished with caulis, the actual cautery, the ligature, and cutting instruments. The first of these plans was successfully practiced by Wiseman; but is now quite abandoned. The second is also relinquished, as no modern farceous employ it, except now and then, with a view of destroying fungous excrecences, which, in a few instances, originate after a part of the tumour has been removed by some other operation.

A variety of instruments has been devised for putting a ligature round diseased tonsils.

There are very good farceous, who still prefer tying diseased tonsils to cutting them away, and the mode to be adopted differs according to the swelling has a narrow or broad base.

The ligature ought to be made of silver wire, or catgut. When the tumour has a narrow neck, the ligature is to be doubled, and introduced through the nostril, so that the nose may be seen in the throat. With the aid of a pair of forceps, the nose may then be easily placed round the neck of the tumour. The ends of the ligature are then to be brought through a double cannula, and the latter instru- ment introduced as far as the tonsil. The ligature on each side is then to be drawn tightly, and fastened round rings—at the end of the cannula. The instrument may next be twisted, till a due degree of contraction is produced.

Default employed an instrument, called a ferre-neud, for putting the nose of the ligature over a diseased tonsil, and producing the necessary degree of contraction. The ferre-neud was nothing more than a little ring, mounted on a longitudinal, narrow piece of steel, about five inches long, the other end of which was grooved, or rather forked. The diseased tonsil was first taken hold of with a double hook. With the ring, the nose was conducted along the hook, and put over the tonsil; the ligature was then drawn out, while the ring pressed the nose downward and backward. Thus the due contraction was made, and it was next maintained by twisting the ends of the ligature round the forked extremity of the instrument, on the outside of the mouth. Default par Bichat, tom. ii. p. 233.

When the diseased had a broad base, and was of a conical shape, so that the ligature was apt to slip off, Celsfelden has recommended the use of an instrument like a crooked needle, set in a handle, with an eye near the point, threaded with a ligature, which is to be thrust through the bottom of the gland, and laid hold of with a hook. The needle is then to be withdrawn. The double ligature is next to be brought forwards, and one part tied above, the other below the tumour. The ligatures are now to be cut off near the knots.

We have already observed, that the removal of the whole enlarged tonsil is unnecessary, and therefore injudicious. We may now notice, that a portion of the tumour may be cut away, without any just ground for fearing a dangerous bleeding. The application of a ligature occasionally produces a most perilous swelling of the diseased tonsil, attended with such hazard of suffocation, as to compel the farceous to cut and remove it. Bertrand, and many other eminent farceous, have been in the habit of cutting away enlarged tonsils, without ever meeting with an instance of danger from the subsequent bleeding.

Default sometimes employed a flat sheath, made of silver,
and having a notch in it for the reception of the bale of the tenon. The latter part being thus taken hold of, a spring was touched, when a concealed blade immediately moved across the notch, and made the requisite division, without any risk of injuring the adjacent parts in the mouth.

The operation may be done with a pair of scissors, constructed with three blades and long handles; or it may be performed with a bistoury, which, in general, must be the best instrument.

The hemorrhage may usually be stopped by repeatedly washing the mouth with very cold water.

When the enlargement of the tenon is really of a circular nature, a circle which is possible, though not common, in operations performed so as to remove only a part of the indicated enlargement, would not be followed by success.

Calculous concretions have been known to form in the tonsil, occasioning troublesome coughing, feverishness, &c. The propriety of excising them, when their existence is clearly ascertained, is almost too obvious to require being mentioned. Part I. Lines on the Practice of Surgery, by Samuel Cooper, ed. 5.

TONGSTALL, or TUNSTALL, CUMBERLAND, in England, an English family, was the natural son of a gentleman of good family, and born at Hunsford, in the ancient Richmondshire, about the year 1744. Having studied both at Oxford and Cambridge, he travelled for further improvement, and graduated doctor of laws at Padua. Recommended by the learned and character of archbishop Warham, he became his vice-general, and was married to the king by the request of Hunsford, in Middletown. Besides other preferments, he was appointed, in 1756, to the office of master of the rolls, and in this year accompanied the Thomsen More as ambassador to Charles V. at Brussels, where he formed an intimacy with Erasmus. After obtaining other preferments, and accomplishing another embassy to the emperor, he was promoted, in 1753, to the see of London, and in 1759, to the see of Limerick of the perry hall. He was afterwards employed in several missions of importance on civil affairs: and whilst he was at Antwerp, he manifested his religious zeal by burying all the unkind echoes of Tuxtall's translation of the Bible, in order to burn them in St. Paul's Crock. His zeal was finally engaged in urging Erasmus to write against Luther, and in infusing persecutions against heresy. In 1750, Tuxtall was promoted, in recompense of his services, to the see of Dacia. Floshing in his disputations and politics, he left a party and afterwards disapproved the divorce of Catherine of Aragon: he side defended Henry's assumed right of supreme head of the church, after having at first protested against it; and though he was not inattentive to the instructions of the papal see, he was firmly attached to the doctrines of the church of Rome. Respecting, as we hope, of having burnt the Bible, he joined with Heneage, bishop of Rochester, in revising an English translation of it in 1542. Under Edward VI., he conformed to all the ordinances relating to religion, whilst in parliament he protested against every change. As long as his rich bishoprick possessed a tenon, which those who sought preferment could not resist, and therefore Tuxtall was charged with misappropriation of treasuries, and a bill of complaint was brought into the house of lords, which, though supported by Cranmer, passed that house, but was stopped in the commons, the evidence being thought insufficient. His enemies, however, determined to discharge him, and a commission was appointed to examine him with regard to all complaints, &c.; and having been found guilty, he was degraded, and committed to the Tower, where he remained a prisoner to the end of this reign. The see of Dacia was converted into a county palatine, and granted to the duke of Northumberland. On the accession of Mary, he was restored to his see; and his temper being mild, he neither avenged himself on his enemies, nor were any persons brought to the stake in his diocese during this stagnant reign. His whole conduct seems indeed to indicate a favourable change in his temper, for he discouraged persecution, and afforded an asylum to his nephew, Bernard Gilpin. (See his article.) When Elizabeth succeeded to the crown, hopes were entertained that his moderate principles would have led him to acquiesce in the reformation, but he preferred the surrender of his episcopal to the complaints against which his conscience revolted. Refusing to take the oath of supremacy, he was deprived, and being committed to the custody of Parker, archbishop of Canterbury, he was treated with kindness, and by the prelate's reasoning induced to abandon some of the greater errors of popery. He died in 1559, at the advanced age of eighty-four, and was interred at the archbishop's expense, in the church of Lambeth. As to his personal character, he was much respected and attentive to his ecclesiastical duties; and in his private life, exemplary and amiable. He was author of several works, among which was a treatise on arithmetic. Some of his letters are preserved in Erasmus's collection. Dtg. Brit.”

TONSURE, formed from tonsure, or chore, the art or act of cutting the hair, and shaving the head. See Hair.

Tonsure was formerly a mark of infamy in France; so much so, that when they would render any prince incapable of succeeding to the crown, they cut off his hair and shaved him.

See Beard.

Tonsure, in the Roman church, is used for the entrance of admirers into holy orders.

In propriety, tonsure is the first ceremony used for devoting a person to God and the church, by presenting him to the bishop, who shaves him the first degree of the clerics, by cutting off part of his hair, with certain prayers and benedictions.

Some hold the tonsure a particular order; others, as Loyola, only the mark and form of ecclesiastical orders in general.

The tonsure suffices to make a clerk; the act is only to qualify him for the building of benefices. A person is capable of the tonsure at seven years of age; thence a benefice of simple tonsure is such an one as may be enjoyed by a child of seven years old. The tonsure is the basis of all the other orders.

Tonsure is also used for the crown, which priests, &c., wear, as the mark of their order, and of the rank they hold in the church. See Crown.

The barbers have the merchants and dimensions of the different kinds of tonsure, or clerical crowns, to be graded according to the different degrees and orders. A clerk's tonsure, a budonnel, tonsure, a dean's tonsure, a priest's tonsure, are each respectively bigger than the other.


Gen. Chr. Cal. Peruvian Superior, of one leaf, in four deep, ovate, acute, equal, spreading segments. Cor. of one petal, funnel-shaped; tube thence as long as the calyx; limb in four deep, ovate, acute, equal, spreading segments. Stam. Filaments four, thread-shaped, inserted into the throat of the corolla, between the segments, and about equal to them in length; anthers roundish, of two cells. Phil. Geranium roundish, inferior, crowned with an auricular disk; style rather
rather longer than the corolla, thread-shaped, divided half way down; stigma dilatant, obtuse. Peric. Berry ovate, crowned with the withered calyx, of two cells, cajly separable. Seeds numerous, convex on one side, concave on the other, winged, inserted into the transverse partition.

Eff. C. Corolla of one petal, funnel-shaped, four-crested, acute. Berry of two cells, with many winged seeds.

1. T. guianensis. Aubl. t. 42.—Native of moist woods in Guiana and Cayenne, flowering, and bearing ripe fruit, nearly all the year. A trailing herbaceous perennial plant, creeping by means of fibrous radices; the stem and branches round, slightly downy. Leaves opposite, flaked, ovate, fleshy, entire, hairy, an inch and half long, with a pair of infrafoliaceous stipules. Flowers white or blue, three or four together, in little, axillary, flaked, solitary heads. Berry blue, with a viscid juice. Schreber's Bellardia was named in honour of Dr. Charles Louis Bellardi, the co-adjutor of Allioni, and still living at Turin. His Appendix ad Floram Pedemontanam, and his Observazioni Botaniche, prove him an able and observing botanist. Bellardia ought to have been noticed by one of our predecessors in its proper place. We should adopt it here, in the place of the above faulcy name, Tontanea, there were not much doubt of the identity of the plants. Schreber describes his as having linear unequal segments to the calyx, a hairy or villous oblong corolla, very short flamin, linear anthers, and the nearly glabrous capsule, not a berry. Neither does he notice a wing to the seeds, which he describes as acutely angular, and dotted. Had he not cited Aublet, no one would have supposed its genera to belong to each other; nor does Schreber himself scarcely affect it. Of his Bellardia nothing is known, except from his own generic character, because he never published a Species Plantarum, to clear up the obscurities attendant on his new genera.

TONTAPILLI, in Geography, a town of Hindooftan, in the cirear of Rajamundry; 30 miles N. of Rajamundry.

TONTESCO, a town of Africa, in Bambouk; 10 miles N. of Combregoudou.

TONTELA, in Botany, Aubl. Guian. t. 10. See Tonailla.

TONTI, or TONTY, in Geography, a river of Canada, which runs into Lake Erie, nor far from the Orwell.

TONTINE, a loan raised on life-annuities, with the benefit of survivorship. Thus, an annuity after a certain rate of interest is granted to a number of subscribers, who are divided into classes according to their ages; and annually the whole fund of each class is shared among its survivors, till at last it falls to one, and on his death it reverts to the power that first established the tontine. The term is derived from the name of the inventor.

TON-TING, in Geography. See Tong-Ting-Hou.

TONTON, an African drum, which Peer Labat, in his voyage to Guinea, tom. ii. numbers among the musical instruments of the Negroes, and which is never used but upon the approach of an enemy, or on extraordinary occasions. It seems to furpafs in force the Stenterophonic tube of Alexander the Great; as it is said that it can be heard at the distance of fix or seven miles.

TONTORAL, Cape, in Geography, a cape on the coast of Chili. S. lat. 27° 30'.

TONTRAVERLORE, a town of Hindooftan, in the cirear of Condapilly; 25 miles W.N.W. of Mafulpitam.

TONVORE, a cape of Scotland, on the N.W. of the island of Illy. N. lat. 55° 51'. W. long. 6° 27'.

TONYES, a town of Mexico, in the province of Culican; 60 miles N.E. of St. Miguel.

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TONYN'S ISLANDS, a cluster of small islands in the East Indian sea, near the S.W. coast of the island of Celebes. S. lat. 6° 31'. E. long. 119°.

TONZI, in Ancient Geography, a town of Thrace, on the coast of the Euxine sea, between Apollon and Peroncticum.

TONTOS, or TONTUS, a town in the interior of Thrace.

TOOBIKAN, in Geography, a small island in the Sooloo Archipelago. N. lat. 6° 14'. E. long. 120° 44'.

TOOBIGHA, one of the Society islands, in the South Pacific ocean. Its greatest extent, in any direction, exclusive of the reef, is not above five or six miles. Small as the island is, there are hills in it of a considerable elevation. At the foot of the hills is a narrow border of flat land, running quite round it, edged with a white sand beach. The hills are covered with graw, or some other herbage, except a few rocky cliffs at one part, with patches of trees interpersed to their summits; but the plantations are more numerous in the valleys, and the flat border is quite covered with high strong trees, whose different kinds could not be discerned, except some cocoa palms, and a few of the etoa. According to the information of some men who captain Cook saw in the canoes, their island is stocked with hogs and fowls, and produces the several fruits and roots that are found at the other islands in this part of the Pacific ocean. This island is populous, and the inhabitants are more sedate than the natives of the Society islands, as well as less hospitable. Fletcher Christian, with his companions, mutineer of the Bounty, attempted to form a settlement here in the year 1789. They had a dispute with the islanders, and a severe engagement, in which one or two of the mutineers were wounded, and many of the natives were killed. Christian, after this, left the island of Toobouai, and failed to Otaheite, where some of the crew left him; nine only remaining on board, with some of the natives, men and women, with the Christian cut the cable, and put to sea, since which time he has not been heard of. The language is the same as that spoken at Otaheite. S. lat. 23° 25'. E. long. 210° 37'.

TOODIWAHI, town of Pegu; 35 miles S. of Lundey.

TOODIGUNTIA, a town of Hindooftan, in Golconda; 25 miles E. of Damippeta.

TOODY, a town of Hindooftan, in Canara, on the coast; 21 miles S. of Carwar.

TOOE, a town of Hindooftan, in Bahar; 12 miles E. of Bahar.

TOOFI, one of the Friendly islands, visible from Annamooka, by means of its height, and a volcano, which almost constantly emitted smoke, and sometimes threw up flames. Its shores are steep, and covered with black sand. The rocks are hollow, and in some places of a cylindrical form. The mountain, except in spots that appear to have been recently burned, is covered with verdure, shrubs, and trees. The coast is about five leagues in circuit. To the north-east of this island, and about two miles distant, is another of much less extent, but of thrice its height, which is called Kaö; it is a mountainous rock of a conical form. Both these were discovered by Tafman, and have been seen by every subsequent navigator of this group. Captain Cook pafted between them, and had no soundings in the channel by which they were separated. Each island was understood to be inhabited, but no European had landed upon either, at the time when the mutiny suddenly occurred in the Bounty two days after the departure of that vessel from Annamooka. Lieutenant Bligh was forced into a boat with eighteen of his people, when ten leagues S.W. from Toofea: he attempted...
therefore to get an immediate supply of bread-fruit and water at that island, which, as he understood, afforded these articles. The next morning, 18th of April, 1795, they landed in a boat on the south-west coast; they climbed the heights, but obtained only some coco-nuts and plantains, and a few gallons of water from holes in the rocks. The weather being too boisterous to proceed, they sheltered themselves by night in an adjacent cave. On the 19th of May, several of the inhabitants brought them a small supply, and retired peacefully in the evening. The next day their number greatly increased. Some principal persons also came round the north side of the island in canoes, and among them one of the chiefs whom captain Bligh had threatened to carry from Timor to keep him on board the Resolution, when the weather should become moderate; but some symptoms appearing of a design to obtain by force the articles that he could not afford to part with, he determined to depart that evening, as they were not inclined to return. They had previously loaded him with some of their weapons, and they now allowed his people to carry their property into the boat; but they would not suffer him to embark, and a contest ensued, in which most of the English were wounded by stones, and one of them was killed. The ship escaped, and bore away towards New Holland, from whence they reached the East Indies in their boat, enduring extreme hardship, but not further loss of lives.

TOOGAUM, a town of Hindostan, in Bagmati; 16 miles S. of Jumna.

TOOK, a town of Persia, in the province of Cohadran; 40 miles E. of Tihanauli.

TOOK, John Horne, in Biography, the third son of a provost in Newmarket, was born in Westminster, in June 1756, and having spent some years at Westminster and Eton schools, was admitted into St. John's college, Cambridge, in 1773, where he took the degree of B.A. After graduating for some time as an usher in a school at Blackheath, he took his master's orders, in compliance with the wishes of his father, and served as a curate in Kent. But the law being the object of his choice, he entered into the Inner Temple in 1786. Nevertheless, in 1780, he was ordained as a priest, and inducted into the chappelry of New Barnetford, parochial for him by his father. But as he entered very deeply and warmly into the political debates of the period in which he lived, he ceased officiating as a clergyman, and took an active part in the transactions of that period. When Wilkes returned from his exile to France, and became a candidate for the representation of the country of Middlesex, Horne was his zealous adherent, and was thought to have contributed to the success of his election. It is said that it was by his influence that Mr. Beckford had success in 1782, made a verbal reply to his majesty's answer to a remonstrance from the city of London; and thus he drew up that reply, as is said, on the occasion of Mr. Beckford's illness at Guildhall. He is regarded as the principal founder of the "Society for Supporting the Bill of Rights," of which he was an active member; and by his exertions Bingley, a printer, who had been convicted of sedition by lord Mansfield for refusing to appear for the purpose of answering to interrogatories, was at length liberated. In the years 1780 and 1781, a quarrel took place between Wilkes and Horne, in the presence of which the latter left the building, without incurring any suit charge against his political integrity. In 1782 he took his degree of M.A., though opposed by some members, among whom was Mr. Paking. To him for a time, the publication of the debates in the House of commons has been continued without interruption. At this time he had a literary controversy with Junius, in which he was thought to have the advantage. In 1793 he threw off his clerical garb, and proposed to refine his legal studies with a view to the profession. But at this time an incident occurred, which was of material importance with respect to his future fortune. Mr. Took of Parley, in Surrey, had indirectly opposed an income bill, which was likely to be detrimental to his estate, and as this bill was passing rapidly through the Commons, he applied to Horne for advice. After some deliberation he proposed to Mr. Took a remedy, which was to communicate with a friend on the speaker, which he was inclined to write. Accordingly he stated the case, accompanied by some severe reflections, and sent it to the Public Advertiser. When the paragraph was next day reported to the house and read, it occasioned great excitement, and a motion was made for calling the speaker before the house. Mr. Horne, as the acknowledged writer, was called to the bar; he immediately obeyed the summons, and in a respectful manner confuted, that through hatred to opposition, and zeal to serve a friend, he had been urged beyond the bounds of discretion. After a long debate, he was remanded from the bar in custody of the gentleman at arms, and upon being brought up some days after, he was, by the good offices of some friends, discharged upon paying his fees. His purpose was answered; time was thus given for reconsidering the obnoxious bill, and the objectionable clauses were either altered or withdrawn.

Mr. Horne was an ardent supporter of the American war; and when the news of the battle of Lexington arrived, the Constitutional Society voted 500l. to the widows and children of the Americans who had fallen in it; and the resolution on this subject, printed in the public papers, was signed John Horne. In this resolution the following were denounced:—Englishmen who, professing to love liberty, were, for that reason only, implicitly supported by the king's troops at Lexington. For this paragraph he was prosecuted, and tried at Guildhall in July 1775, and pleaded his own cause. Notwithstanding the spirit and warmth with which he defended himself, he was sentenced to twelve months' imprisonment, and to pay a fine of 100l. In the course of this trial he first appeared before the public as a grammatical critic; and in 1782, he printed a letter to Mr. Dunmore, which discussed the justice and meaning of certain observations and propositions employed in his article, and which was the foundation of a larger work afterwards published. In the following year, he was disbarred in his expectation of being called to the bar; for though he was eminently qualified for the profession into which he entered, he was rejected under the pretext of his being a clergyman. This he felt as a very grievous disappointment, and with a mind not a little exasperated he devoted himself to politics. Accordingly, in 1783, he published a pamphlet, entitled "Fame," firmly reversing lord North's administration, and containing two chapters on Finance, supplied by Dr. Price. Soon after the termination of the American war, parliamentary reform became a popular topic; and in 1786, Horne published a letter to Mr. Dunmore (lord Adderbury) under the sign of "A Letter to a Parliamentary Reformer, containing the Sketch of a Plan," of which we shall merely say, that he disapproved of universal suffrage, Mr. Part was at this time a fellow advocate in the same cause. Horne now avowed himself the friend of Mr. Pitt, in opposition to Mr. Fox, whose coalition with lord North he very much disapproved. In 1786 Mr. Horne, having assumed the name of his friend Mr. Tooke, published his "Epica Progressa, or Detractions of Parley," it called from
from the country residence of his friend. Of this work, founded on his letter to Mr. Dunning, already mentioned, the most prominent subject of discussion was the derivation of conjunctions and prepositions from verbs and nouns, whence they acquired a determinate meaning, often different from that which has been arbitrarily imposed upon them. This work attracted the notice of philologists, and gave to the author a high rank among writers on the philosophy of language. (See Grammar.) Politics, however, diverted his attention from subjects of this nature; and in 1788, he published "Two Pair of Portraits," the figures in which were the two Pitts, and the two Foxes, of the past and present generations. The first name was strongly illuminated, and the latter thrown into a dark shade. He might probably, however, at a later period, have adopted a different mode of colouring. In 1790 he opposed Mr. Fox and Lord Hood at the election of representatives in parliament for Westminster; and professing himself unconnected with party, and determined neither to open a house nor to give away a single cockade, he polled near 1700, without solicitation or corruption. On occasion of his defeat, he presented a petition to the house, in support of which he freely indulged himself in very bitter farcical invective. In the year 1794 he was brought to a trial, under the charge of high treason. During the progress of this trial, he maintained the most perfect composure and self-possession; and as he had little to apprehend after the previous acquittal of Hardy, the jury brought in their verdict of "not guilty," after being only eight minutes out of court. In consequence, however, of this trial, he became more cautious in his conduct, and declined the visits at Wimbledon, where he resided, of persons known to be violent in their principles and conduct. Upon the death of Mr. Tooke of Purley, he inherited, in consequence of a previous agreement, half of the property left by that gentleman to his nephew. In 1796 he offered himself again as a candidate for Westminster, and suffered a second defeat, after having polled 2819 votes. He was chargeable, however, with some inconstancy in the acceptance of a seat, in 1801, for the noted borough of Old Sarum, on the nomination of lord Camelford. Some attempts were made to exclude him, under the plea of his being a clergyman; but a compromise being proposed by the minister, Mr. Addington, by determining the future ineligibility of persons in holy orders, he retained his seat till the dissolution of parliament. Having published by subscription a second edition in 1804 of his "Diversions of Purley," a second part in 1805, in which he chiefly adverted to etymology, and to adjectives and participles, and their formation, intermixing fictitious Arcturus upon some literary characters of note. From this time his bodily infirmities, occasioned by a disorder to which he had been long subject, increased, though he retained his faculties in full vigour, and continued to enjoy life. His temper was little affected by mental or physical evil, and "no one more strenuously maintained," says one of his biographers, "the balance of good in human existence." - "His latter days, says the fame writer, "were cheered by early circumstances, and the attention of many friends, whom he entertained with great hospitality, and amused by his conversation, which was singularly pleasant and lively. With an unaltered brow, he could be either facetious or farcical, and his features seldom disclosed what was passing within. His manners were polished, and his appearance was that of a gentleman of the old school." His life at length terminated, by tedious and continued decay, in March 1812, in the 77th year of his age. As he was never married, his property was bequeathed to his natural children. Stephens's Memoirs of John Horne Tooke.

TOOKOK, in Geography, a town on the W. coast of Borneo. S. lat. 2° 24'. E. long. 109° 40'.

TOOLAJEE, a town of Hindoostan, in Guzerat; 20 miles S. of Gogo.

TOOLEN, or TULLEN, (i.e. the Isle of Seals,) a small island in the Caspian sea, near the W. coast. N. lat. 44° 14'.

TOOLAPIOUR, a town of Hindoostan, in the country of Dowlatabad; 45 miles E.S.E. of Perinda. N. lat. 18° 20'. E. long. 76° 35'.

TOOLY, a town of Hindoostan, in Gowrdana; 10 miles W. of Coomtah.

TOOLMEDIN, a town of Hindoostan, in the circuit of Bopal; 25 miles S.W. of Bopaltol.

TOOLS, simple and popular instruments, used in more obvious operations, and particularly in the making of other more complex instruments.

The term tool is particularly used by canal-makers, for a kind of strong curved spade or shovel employed in canal-works.

Tools are divided into edge-tools, spring-tools, pointed-tools, &c.

Mr. Parke, in the fourth volume of his "Chemical Essays," has given a history of the origin and progressive improvement of edge-tools, and an account of the materials of which they were constructed. It appears from Goguet's "Origin of Laws," to which he refers, that as many of the ancient nations had no knowledge of iron, they used bones, flints, the horns and bones of various animals, the bones and shells of fish, reeds, and thorns for every purpose in which the moderns now ufe edge-tools of iron and steel. Spears and other instruments for exterminating wild beasts, and even implements of agriculture, were formerly made with gold and silver; and instead of these was afterwards substituted copper, as a metal more easily to be procured than malleable iron. The abundance of celts and other ancient instruments, found in various parts of the globe, shews that copper and bras were formerly in very general ufe. From the prodigious number of copper instruments of different kinds and sizes, which have been found in this country, such as axes, swords, spear-heads, arrow-heads, &c. known among antiquaries by the general name of celts, it is evident that our ancetors were well acquainted with the art of forming metallic copper in any way which they thought proper; whereas the ufe of metallic iron is comparatively of late introduction. At the time of the first Roman invasion, this metal was fo rare, that the Britons fabricated their money with it, and even their ornamental trinkets. But the Romans having made themselves masters of the country, established imperial founderies for making iron, and constructed forges for manufacturing spears, lances, battle-axes, and implements of every kind, in different parts of the kingdom. (See Cesar, de Bell. Gall. lib. v. c. 12. Henry's Hist. of Britain, vol. ii. p. 139, 140.) At the battle of Hamilton, in 1402, the repulse of the Scots appears to have been entirely owing to the excellent temper of the arrows which were employed by the English army. Swords also were then in ufe, and Sheffield was, even then, famous for its cutlery. Table-knives, it is said, were first made in London in 1563, by one Thomas Matthews of Fleet-bridge.

Good edge-tools cannot be made without steel; and of this there are various sorts (see Steel); such as blifered, sheet, spur, flar, and cast steel; besides which there is a kind of German steel, made immediately from the iron ore, by mifple fusions. (See also Wootz.) The cheapest
edge-tools, and other less important articles, are usually made with the first-mentioned kind, united to a large proportion of bar-iron. Clothiers' shears, firmer chisels, plane-irons, cooper's adzes, scythes, reaping-hooks, and large-knives, are commonly made with filet-steel: for the method of manufacturing it, see Steel. The spur and star filet are used only for particular purposes, according to the fancy of the master cutler. Call-filet is used for the best pen-knives, scissors, and razors; and fine faws, surgical instruments, and all edge-tools which require a fine polish, and various other implements employed in cutting iron, are all made with call-filet. The superior beauty of instruments made with call-filet would have occasioned a very great consumption of this article, if it had not been for the difficulty of welding, and uniting it properly with iron, and which occasioned its being used at first only for those smaller instruments, such as lancets and pen-knives, which are generally made entirely of filet. But since the discovery made by Sir Thomas Frankland (for which see Welding), call-filet has been brought into more extensive use, and the instruments that are thus constructed, are much better than those which are made entirely of call-filet. The circumstance of an instrument having its back made of iron, renders it not so apt to fly from the work to which the edge or filet part is applied, and eventually less liable to break.

Many artists, long after the invention of call-filet, used to unite it to the iron by means of rivets. Hoes are still made by riveting or screwing the back, together with the eye, upon a blade made with call-filet. We cannot minutely recite the various manipulations that are practiced in the manufacture of different edge-tools. The reader will find information of a more ample kind in the work of Mr. Parkes, above cited. (See also our article Cutlery.)

We shall, however, select the following particulars: the cooper's adze and the carpenter's axe are first formed by the white-smith, in iron, together with the eye for the handle. The instrument is then heated again, and the edge of the cutting part is slit down with a chisel, and this slit is filled with a thin piece of steel, of a corresponding face and form. The iron, that has been slit upon, is folded down upon the filet, and the whole again heated to a welding heat, when the filet-hammer quickly unites the iron and the steel into one compact mass. Scythes and such other large instruments are forged at the mill, by means of a large hammer, moved by water, and the process is called "fileping." Augers, gouges, large chisels, table-knives, razors, and other instruments of a similar bulk, are forged upon a large anvil by the principal workman, aided by an assistant called the "striker," who strikes occasionally with a filet-hammer. Pen-knives, lancets, gravers, surgical instruments, and other small edge-tools, are generally forged on a small anvil firmly fixed within a large one, in order to give greater steadiness. These are usually fashioned out of filet only, and forged by one workman singly and alone. Scissors are also forged by a single hand; but the anvil on which they are fashioned is of a peculiar construction, having boisse or dies, and beak-irons of various sizes occasionally adapted to it, so as to suit the different shapes and dimensions of the separate parts of these particular instruments.

It should have been noticed, that many other tools besides the axe and the adze are originally forged out of a piece of iron, with a little filet welded to it for the cutting part of the instrument.

The real Damascus sword-blades are said to be composed of slips or thin rods of iron and steel bound together with iron wire, and then firmly cemented together by welding. It is well known that it is the circumstance of drawing down the filet-steel under the tilt-hammer that gives it the superiority over common steel. (See Tilt-Hammer, and Tilling of Steel.) Mr. Bingley therefore suggests in his patent, that, if he could roll out his steel much thinner than it had ever been done before, he should much improve its quality: and accordingly a very thin piece of steel is let into the face of a plane-iron made of cast-iron; and, as the filet for this particular purpose has to go through the rollers several times to make it sufficiently thin, it becomes of a peculiar texture, and the tool made with it is found to suit the joiner much better than the plane-irons heretofore in use.

In the manufacture of edge-tools, the process which immediately succeeds the forging is that of hardening. All these cutting instruments are therefore fashioned when the metal is in its original soft state; and when they have attained the intended forms, they are heated afresh to a particular temperature suitable to the article. When they have acquired that degree of heat, they are instantly plunged into cold water, which gives them great hardness, and renders them capable of cutting soft iron, or even steel. See Tempering.

Tools, Draining, in Agriculture, are various kinds of tools which are employed in performing this sort of work, such as spades, shovels, scoops, draining augers, boring augers, or rods, file-knives, &c. See these heads.

Tools, Lopping or Pruning, in Rural Economy, are the various tools, such as hedge-bills, large knives, axes, faws, chisels, &c. used in taking off the side-shoots and branches of forest-trees. And lately an instrument uniting several of these properties has been invented, which is very convenient, and readily dispatches the business. It is described as below in the first volume of the Memoirs of the Caledonian Horticultural Society, where a representation of it is also given. It is perfectly simple in its form, having merely two edged hooks, projecting from a socket-shank three inches in length, the breadth of which, where the hooks spring off, is two inches and two-tenths of an inch; the hooks themselves project from the shank three inches; between them, and on the top or upper side, is placed a strong chisel, four inches in breadth, and one inch in depth; the whole tool or instrument being about eight inches in width. The length of the wooden handle must, of course, be in proportion to the height and size of the trees to be lopped or pruned, as in different lengths, from six to eighteen feet, which height, it is said, as long as a man can well and properly manage them. Where trees require lopping or pruning to a greater height than the above length of shaft or handle, a ladder is to be made use of for the purpose, and one of the short-handled tools or instruments.

It is noticed, that the hook part is what is principally made use of, which cuts the branch from the upper side; the chisel is only employed when fings are left, and where branches are too strong for the hooks; in which cases, the chisel is first made to strike the branch from below; but a mallet is never used.

It is observed that fir-trees will certainly be greatly improved by lopping and pruning with this tool, both as to growth and quality of timber; but that care should be had not to over-cut or prune them. Larches will, it is said, always live when that is the case with them, by breaking out into numerous unnatural branches; but it may not be so soon noticed in Scotch, fir-prune, and other trees, which, however, have generally a stinted appearance for some years afterwards, and that it sometimes occasions their death. Four or five tiers of branches should always, it is thought, be left, particularly on young trees; and that on larches there should be still more.

Tools, Scraping, in Agriculture and Rural Economy, the several
several sorts of tools and contrivances which are formed and made use of for cleaning and removing the mould, dirt, and other matters, that may adhere to different kinds of implements while they are in work, as those of the drill, roller, plough, and some other kinds; and to the surfaces in some other cafes, as those of wheels, roads, &c.

In the drill and the roller, the scrapers mostly consist of thin bars of iron or wood, fo constructed and fixed behind, as to take off the dirty or mouldy cloggy substances as they collect upon them. In ploughs it is usually done by a small bar of wattle, with a short handle used by the ploughman. The surfaces of wheels, in heavy carriages, are cleaned by tools of the scraping kind, properly contrived for the purpose. For tools of this kind, where the tires of the wheels, in such cafes, are made concave, it has been advised that a small item should be fixed to the body of the carriage, which may present a convex scraper; which, on account of the shifting of the wheel on its axis, sometimes a full inch or more at its perimeter, should be made to slide on the item, having a kind of bracket to embrace the thickness of the wheel; thus the thickens of the wheel having presented to it a convex scraper sliding on a square item; which, allowing one or two inches of play, has at its outer end a bolt-head, the two arms of which forming a bracket, will always keep the scraper opposite to the groove, or hollow in the wheel.

It is suggested that the blade of the scraper should be very shallow, as it would otherwise operate as a lever upon the bar; and either wrench it, or ultimately round off the corners, so as to allow the tool to be turned out of its proper direction, which should be at an angle of five degrees under the horizon. But it is supposed that the tool for scraping the fore-wheel of a waggon will be more difficult to fix, with proper firmness, on account of its traversing. It might, however, be thought, be effectuated by setting it on a leg- ment attached to the body of the carriage; but the necessary length of item would prove a formidable objection in such a cafe. The bolt mode would, it is thought, be to fasten it to the wooden axle, so as to move always with it, and consequently preserving its relative position to the edge of the wheel.

In other cafes, other sorts of light iron plan scrapers may be fixed fo as to allow them to act in removing the dirt from wheels where necessary.

In the scraping and cleaning of roads, tools of the cowrake headed kind are used by the hand, and large machines in other shapes by horses. See Road-Scraping Machine.

Tool, Skinning, in Agriculture, that fort which is employed in taking off the surface of the land in ploughing, in order to its being deposited in the bottom of the preceding furrow, and thus making neat clean tillage-work. Tools of this kind, with sharp paring and cutting edges, are differently formed, according to the purposes to which they are to be applied; but the mode of fixing them to a sort of fore-cutter in ploughs is considered by many as a great improvement, as they are found in that way to do the work much better than if attached to the common coulter, in which manner they sometimes do not work well. See TILLAGE.

TOOLUC, in Geography, a town of Hindooftan, in Mohurung or 36 miles N.W. of Harropriour.
TOOLUMBO, a town of Africa, in Banbarrat. N. lat. 12° 55'. W. long. 5°.
TOOM, a river of Hindooftan, which runs into the Tungbabad, 15 miles S.E. of Sanore.
TOOMANUA. See Orown.

TOOMBEWADY, a town of Hindooftan, in the Car
nen: 5 miles S.W. of Caroor.
TOOMBUCK, a town of some note on the Perfian gulf, between Congou or Kungoon, a large and populous town, and Tashir or Taluir.
TOOMCOUR, a town of Hindooftan, in Myore; 20 miles S.S.E. of Sera.
TOOME-BRIDGE, a port-town of the county of Antrim, Ireland, situated at the northern extremity of Lough Neagh, where there is a bridge over the narrow channel which separates that lake from Lough Beg. It is 27 miles N. by W. from Dublin, and 13 miles W. from Antrim.
TOOMISH, a town of Ireland, in the county of Kerry; 14 miles S. of Tralee.
TOOMRY, a town of Hindooftan, in the cirec of Hind:; 24 miles N. of Hurdah.
TOOMSIR, a town of Hindooftan, in Goondwana; 38 miles N.E. of Nagpore.
TOON, a town of Perff, in the province of Coflefan; 90 miles N. of Tabaskili. N. lat. 34° 32'. E. long. 57° 35'.
TOORDY, a town of Bengal; 38 miles S.S.E. of Curruckdcah. N. lat. 23° 58'. E. long. 86° 34'.
TOONE, a river of Ireland, which runs into the Lee, 15 miles W. of Cork.
TOONG, a town of Hindooftan, in Dowhatabad; 26 miles W. of Poorn.
TOORAMBADDY, a town of Hindooftan, in Myore; 13 miles W.N.W. of Aravacoury.
TOORATTEO, a town of the south coast of Celebes. N. lat. 5° 33'. E. long. 120° 4'.
TOORDA, a town of Africa, in Kaarta; 24 miles N. of Koomo.
TOORGOODY, a town of Hindooftan, in the Car
nen: 10 miles S.E. of Trichinopoli.
TOORSHA, a river of Bengal, which, after its confluence with the Mauna, changes the name of Yescoomar, and shaping its course through Baharbund, falls into the Berhampooter, properly (it is said) Brahmu poota, off- spring of Brahma.
TOOS, a town of Perff, in Khoraffan; 25 miles S. of Mectch.
TOOSANG, a town on the west coast of Celebes. S. lat. 0° 30'. E. long. 119° 38'.
TOOSCHONDOLCH, an Indian village, on the west coast of North America; of importance in the fur trade. N. lat. 53° 2'.
TOOSHOOR, a town of Hindooftan, in Myore; 5 miles E. of Namcu.
TOOSI, a town of Japan, on the south coast of the island of Nipon; 84 miles S.S.E. of Mexico. N. lat. 34° 35'. E. long. 137° 35'.
TOOSIMA, one of the small Japanese islands, near the N.W. coast of Nipon. N. lat. 46° 40'. E. long. 142° 48'.

TOOTH, Dens, in Anatomy. See Teeth.
Tooth-Ache. See Teeth, Disease of.
Tooth-Drawing. See Teeth.
Tooth, Wolf's. See Wolves-Teeth.
Tooth, in the Manage. It is by a horn's teeth, chiefly, that his age is known. See Teeth, in Rural Economy.
Tooth-Ache Tree, in Botany. See Zanthoxylum.
Tooth-Pick. See Daucus.
Tooth-Wort, a name applied to several plants, on account of a resemblance in their roots to the human teeth.
This is very striking in *Lathyrus Spumarius*, whose roots are furnished with smooth white scales, very accurately imitating, except in hardness, the *dentes incisores* or fore-teeth. This resemblance is perceptible also, though less exact, in the roots of the various species of *Dentaria*; see that article. *Ophiurus Cereiformis* of Lianzeus has, for a similar reason, been sometimes called *Dentaria*; which name, or *Dentella*, has also been given by Rondelius to the *Plumbago*, because of the teeth of its corolla; a character found in many other genera. *Dentella*, see that article, owes its name to the last-mentioned circumstance. It is hardly necessary to advert to the reputed qualities of the above tooth-rooted plants, which were founded on the resemblance in question. On this subject more may be said when we come to speak of the *Virtues of Plants*.

**TOOTHED**, in *Botany* and *Vegetable Physiology*, *den- tatus*, is properly applied to the margin of any leaf, petal, &c. when furnished with directly prominent teeth, which in a great part either towards the base or the point of such leaf or petal, or of their segments. Yet this term is not always so strictly limited as it ought, being sometimes negligently used, when *ferrata* would be more proper. *Stamen* however are said to be toothed, when they have any lateral prominence, or notch whatever, as in *Acanthus*.

**TOOTOOCH.** See *Erronan*.  
**TOP.** or **Toppe**, in *Commerle*, a wine-measure at Breslaw, and in other places of Germany. At Breslaw, an eimer of wine contains 20 tops, 80 quarts, or 320 quarters, and is equal to 14¼ English gallons.

**Top**, in *Geography*, a lake of Russia, in the government of Oloinet, about 44 miles in length, and 8 in breadth; 256 miles N.N.W. of Petrovofit. N. lat. 61°, E. long. 30°14'.

**Top of a Ship**, a sort of platform, surrounding the lower mast-head, from which it projects on all sides like a scaffold. Its principal intention is to extend the top-mast-sparrows, so as to form a greater angle with the mast, and thereby give additional support to the latter. It is surmounted by the trellis-trees and crosstrees. The top is also convenient for containing the materials necessary for extending the small sails, and for fixing or repairing the rigging machinery. In ships of war it serves as a kind of redoubt, and is accordingly fortified for attack and defence, being furnished with fowels, musquetry, and other fire-arms, and guarded by a thick fence of corded hammers. It is also used as a place for looking out, either in the day or night. The frame of the top is either cloze-planked like a platform, or open like a grating. In all ships of war, and in the largest merchantmen, the top is fenced on the aft-side by a rail about three feet high, stretching across and supported by flanchions, between which a netting is usually constructed.

The outside of this netting is generally covered with red bays, or red painted canvas, extended from the rail down to the edge of the top, and called the *top-armour*. By this name it seems to have been considered as a sort of blind, behind which the men may conceal themselves from the aims of the enemy's fire-arms in time of action, whilst they are charging their own muskets, carbines, or fowels. The dimensions of tops in the royal navy are as follow: the breadth of the top athwart-ships is one-third of the length of its corresponding top-mast; the length of all tops, from the foremost to the after-edge, is equal to three-fourths of their breadth athwart; and the square hole in the middle is five inches to a foot of those dimensions. The trellis-trees and crosstrees extend nearly to the edge of the tops.

The aft-side of the top is straight, and the fore and aft sides square from thence to the aft-side of the foremost crosstree; from thence the fore-part breaks in with an elliptical curve. Tops in the navy are separated in the middle by a fore and aft line, which makes them much more convenient to be gotten over head.

By a late order in the navy, the under sides of tops are to be planed, and the after-part of the fore and main tops is to be eighteen inches wider, and the after-part of the mizen top, one foot wider than at the chain-plate for the foremost-shroud; the inside of the tops on each side by the part called *rubber's* hole, is to have a flap and hinges, so that a top-sail yard, mast, or a top-sail, may pass inside of it.

**Tops, to lay ropes from a fix-thread rail to the largest cables, are conical pieces of wood, with three or four grooves, or scores, from the butt to the end, for the strands to lie in, and form a triangle. If too broad at the butt, the rope will not close well, nor the strands work to close as they should. A hole is made through the centre of the top, one-third the length from the butt-end, for the staff or bolt to go through, round which are put pieces of old rope, called tails, for the layers to clothe the rope with, and lay it hard or slack, according to the use it is for. A hole is likewise made through the middle of the top lengthways, for laying ropes with a heart. A collar is put on to stiffen the layer when the work is too heavy, and to enable him to hold the tails, and clothe the rope well.

**Tops, to lay ropes of three inches and upwards, have a staff under them, with a truck-wheel at the lower end. An iron bolt goes through the centre of the top, and is fastened down to the staff, on which the tails are put and rounded over the rope, being too heavy to be laid with the collar. A strap is put round the tails, with a wodder for the layer to clothe the rope with.**

**Tops, to lay cables, have a leg to support them, with a truck-wheel at the end to run on, besides the staff which the tails go on.**

**Tops, for laying lines of all sizes, are of box or hard wood, tapered at the after-part, that the line may close sharp. Those for fisht-lines have four grooves, and for runnines eight grooves.**

**Top and Butts, in Ship-Building**, a method of working English plank, so as to make good conversion. As the plank runs very narrow at the top, clear of fap, this is done by dipping the top-end of every plank within six feet of the butt-end of the plank above or below it, letting every plank work as broad as it will hold clear of fap, by which method only can every other beam produce a fair edge.

**Top-Armour, in a Ship of War.** See Top, *jupra*.

**Top-Black.** See *Black*.

**Top-Brim,** a space in the middle of the foot of a top-sail, containing one-fifth of the number of its cloth. It is so called from its situation, being near the fore-part of the top when the sail is extended.

**Top-Chain,** a chain to fling the fail-yards in the time of battle, in order to prevent them from falling down, when the ropes by which they are hung happen to be shot away, or rendered incapable of service. *Falconer*.

**Top-Hamper,** any unnecessary weight aloft, either on the top-side of a ship, or about its tops and rigging.

**Top-Lantern,** a receptacle to hold three or more lights, made of tin and glass, placed in the aft-part of the top, in any ship where an admiral or commodore leads the van of a fleet.
TOP

Top-Lining, the lining sewed on the aft-side of top-falls, to preserve the fail from the chafing of the top.

Top-Maft, the second division of a masts, or that part which stands between the lower mast and the top-gallant mast. See Mast-Making.

By a late order in the navy, the blocks at the heels of top-masts (particularly in line-of-battle ships) are to be discontinued, and the top-masts made from as small blocks as possible; the sheave-hole is to be placed nearer the heel, by which means the several quarters will be brought nearer the butt, and the sizes of the decks for making of top-masts diminished; and as some of the rough blocks will work one way larger than the other in the upper quarters, and thereby increase the circumference of the wood, where strength is so requisite, leave this additional wood, and make the masts oval: a hoop is to be placed below the sheave-hole, and above the fid-plate.

The caps of top-masts, also, are to have a semi-circle cut at the after-part, with an iron clamp to fit, so as to admit of getting a top-gallant-mast up shaft the top-mast, if necessary in chase.

The heels of jib-booms are also to be left square, to serve as substitutes for mizen-top-masts occasionally: and let the hearts be prepared conformable thereto.

Top-Gallant-Masts, are two, viz., main-top-gallant-mast, and fore-top-gallant-mast, which are small round pieces of timber, set on their respective top-masts; on the top of which masts are the top-sheets, on which the colours, as flags, pendant, &c. hang.

Top-Masting is fastened to the rail, shrouds, and top, to preserve the men from falling, &c.

Top-Rope, a rope employed to sway up a top-mast, or top-gallant-mast, in order to fix it in its place, or to lower it in tempestuous weather, or when it is no longer necessary. The rope used on this occasion for the top-masts is furnished with an assemblage of pulleys at its lower end, called the top-tackle; the effort of which in crefting the top-mast is communicated from the head of the lower-mast to the top of the top-mast; and the upper end of the latter is accordingly guided into, and conveyed up through the holes between the treffel-trees and the cap. For this purpose, the top-rope, passing through a block which is hoisted on one side of the cap, and afterwards through the holes, furnished with a shave or pulley, in the lower end of the top-mast, is again brought upwards on the other side of the cap, where it is at length fastened to an eye-bolt in the cap, which is always on the side opposite to the top-block. To the lower end of the top-rope is fixed the top-tackle, the effort of which being transmitted to the top-rope, and thence to the heel of the top-mast, necessarily lifts the latter upward, parallel to the lower-mast. When the top-mast is raised to its proper height, the lower end of it becomes firmly wedged in the square hole, between the treffel-trees. A bar of wood or iron, called the fid, is then thrust through a hole in the heel of it, across the treffel-trees, by which the whole weight of the top-mast is supported. In the same manner the top-gallant-mast is crefted, and fixed at the head of the top-mast.

Falconer.

Top-Sail-Lifts. See LIFTS.

Top-Sails, and Top-gallant-sails, in a Ship, are those belonging to the top-masts, and top-gallant-masts. The former are extended across the top-mast by the top-fall-yard above, and by the yard attached to the lower-mast beneath; being fastened to the former by rebands, and to the latter by means of two blocks fixed on its extremities, through which the top-fall sheets are inferted, passing from thence to two other blocks fixed on the inner part of the yard, close by

the mast; and from these latter the sheets lead downwards to the deck, where they may be fackened or extended at pleasure. The top-gallant-sails are expanded above the top-fall-yard in the same manner. Falconer. See SAILS.

Since the article Sails-making was printed, the following alterations concerning sails have been adopted in the navy; viz. top-sails are to be reduced by deducting four inches for every three feet in length of the top-mast, instead of three inches and an eighth, as at present.

Mizen-top-sails are to be hollowed in the foot a yard and a half, instead of twenty-seven inches, to prevent rubbing over the stay; and top-gallant-sails are to be hollowed two feet in the foot of the sail, for the above-mentioned purpose.

The main-top-mast-day-sail is to have five inches gore in every cloth at the foot of the sail, and long gare at the clue.

Mizen-courtes are not to be supplied to any ships under fifty guns, but two drivers in lieu.

Driver-booms, as used in 1806, are to be reduced two inches in every yard. The length of the gaff to be in proportion to the sail, and then three feet added thereto, to throw signals.

Drivers are to be cut with a deduction in length, to answer the reduction in length of the boom and gaff, as above. Drivers for line-of-battle ships, the leech is to be twice the length of the leaf. For frigates, the length of the leech is to be once and two-thirds the depth of the leaf.

Jib.—The after-leech rope is to be two inches and a half in ships of the line, and in forty-gun frigates two inches and a quarter; other ships above twenty guns two inches, and one inch and three-quarters all under.

White bolt-rope is to be used in making of falls, instead of the tarred rope at present in use.

Single clump-blocks of eight inches in size are to be strap-bound, clue-garnet fashion for reef-tackles in the leech of falls.

Top-Side, a name given to all that part of a ship's side above the main-wales.

Top-Timbers, the timbers which form the top-side of a ship. The first general tier which reach the top of the side are called the long top-timbers, and those the lift above are called the short top-timbers.

Top-Timber Half-breadth, a section containing one-half of the ship, at the height of the top-timber line, perpendicular to the plane of elevation.

Top-Timber Line, is the curve limiting the height of the sheer at the given breadth of the top-timbers.

Top-Timber Sweep, is that which forms the hollow of the top-timber. This hollow is, however, very often formed by a mould, so placed as to touch the upper-breadth sweep, and pass through the point limiting the half-breadth of the top-timber.

Top-a-Starboard, and Top the Yard-arms. See TOPOGRAPHY.

Top-Bank, signifies the level of the top of a canal's bank; as B C K, Plate 1. Canals, fig. 1. &c. This is generally about one foot higher than the surface of the water D K.

Top-Sailing, the art of taking off the vegetable mould or top-soil before a canal is begun, to be returned again upon the bank and new-made ground by the side of it.

Top-Water is the level line of the water's surface, as D H (Plate 1. Canals figs. 14 and 15.) in a canal C F G L.

Top-Draining, in Agriculture, a term sometimes applied to the practice of removing surface-wetnesses from land, either before it is to be prepared for the seed, or after that
Top

has been put into the soil. In the latter of which case, the
wattle, for the water are to be finished with the plough,
so as to terminate in the drains which have been formed, and
take it away. This should be done daily, as the field is
grown over by the harrow. See Superficial Dressing.

"This is an "official" sort of dressing for ploughed lands that
are intended to be sown.

Top-dressing, a term applied to such sorts of reduced
and other manures as is laid upon the surface of land with
out being turned into it; and also to the practice of dress-
ing the surface of great-land, or that of other kinds of land
in crops, with some sorts of highly reduced or powdery
manure, that can be evenly spread out or sown equally over
by the hand.

In the cultivation and management of lands of this
type, a great variety of substances is used for this pur-
puse, such as foot, alfalfa, the dung of rabbits, pigeons, and
other birds, rape-juice, rapeseed, malt-juice, and several
others; the manure, use, and benefits of which are more
particularly noticed under their respective heads, which
follow.

The advantages which the Hertfordshire farmer derive
from the practice of spring or top-dressing their lands and
crops, are fully shown in the statements that have been given
in the original report of the agriculture of that district:
in which it is said, the spring or top-dressings of their
lands are the leading feature of the farming in that county,
and consist of foot, which malt-juice and oil-cake dust, or
possibly powdered oil-cake. The foot is generally sown on
the wheat-crops which have had no previous manure. It is laid
in humps on the crop in winter, and sown over them in the
spring. But the other top dressings are hoed, and kept
dry all used in this way for the period of time. See Super-

It has been observed in some of the early Essex, agricul-
tural reports, that the application of manures upon the sur-
face, or what is generally called top-dressing, ought chiefly
to be regulated by the following considerations, as, first,
whether the soil is of such a nature as to require such an
amendment; secondly, whether it is proper to apply it,
and, thirdly, whether the same is capable of affording nour-
ishment to vegetables, which is brought into the close and
immediate contact with the bottom of the plant or grain,
containing vegetable food in the soil; and, fourthly, whether the plant
supposed to be fed by this manure, draws its nourishment
principally from the ground, or in other ways.

It is said that in the Essex district all these crops it
is plain the manure should only be slightly covered or lightly
ploughed under. But that when the manure is of such a
nature as to apply but highbly to such considerations, when
it is capable of being diffused on the surface, and conveyed
by water downwards to the root of the plant, or by evaporation
into vapour, to be absorbed by their tissues or leaves,
and that the plant is equally prone to receive its nourishment
in both ways, the economy and effective operation of top-
dressing are unprofitably the most highly beneficial and
greatly to be preferred.

These top or spring-dressings are peculiarly applicable to
poor light lands and gravelly lands, and of course to the
production of the specifically heaviest corn; and they put
such lands more on an equality, in point of annual value,
with stronger and richer soils.

And in the Corrected Agricultural Report of the same
district, it is stated that when top-dressing, though they open
and loosen the soil, do not feed a crop. They are sup-
pended to last two crops, and to be of such benefit to wheat,
croppers that when tenants quit farms, they are allowed half
the expense of sowing or top-dressing the clover, which
has been laid out, that the incoming tenants are to sow with
wheat; some few instances too are met with of sowing them
over or on wheats. The usual time is the middle of winter,
if the frost be mild or moist. Moss is destroyed by some
with this sort of top-dressing on park grass-land, who think
they do little good to the wheat that follows the clover
on which they are spread, otherwise than by improving the
clover. They are decidedly of opinion that it is better
undercover to use foot on barley than this kind of top-
dressing; as the farmer will do much good to the following
wheat, whereas the latter are of no more utility to the wheat
than by increasing the quantity of the clover crop. The
farmers in these cases grow from two to sixteen acres on
clovers.

In other parts of the same district, these sorts of top-
dressings are laid to be very beneficial; and that on
being spread out on clover, they do as much good to the
following wheat, as that of a top-dressing of the foot kind
or footing would do. On a comparison of them, as sown
in November and February on clover, over exactly the same
places of land, in the same quantities; there used at the
former period produced the best crop by about a fourth
part of a load of this sort of hay on the acre. Some, how-
ever, in other places, do not much approve of such top-
dressings, except on clay, to harden the soil, as they term
it; they are supposed to do little good on arable chalk
lands.

Top-dressings composed of the dusts of different cakes
are found very useful, but often too expensive for the pur-
pose. Some think those of the hopped cake kind the best
dressing, and have them for wheat in top-folding, even to late
at the month of May, with sheep fed on such cakes as
troughs. The dust of cakes of the rape kind has likewise
been much employed in some places as top-dressings, even
when the expense has been so high as twenty shillings the
quarter. Mills are constructed for grinding it in the above
district, and large quantities are imported from Ireland, and
perhaps other places. Some have houses attached to these
mills for reducing it to dust in a measure, the use of
which is greatly approved of in some cases. By some it has
been found that it answers the best when spread on wheat.
The quantity of this manure as a top-dressing is of from
twelve to sixteen bushels on the acre, as much as to the
richness of the land or soil, already in a tolerable state
of condition. It cannot be made use of for any crop
better than for that of wheat. By having machinery for
breaking and reducing it into a dusty state, the farmer is
said to have the advantage not only of buying it in at
any time of the year when it is the most reasonable, (for as
the two seasons of using it come on, it often increases in price,
and is again cheaper when they are past,) but of readily pre-
paring it and keeping it free from any admixture of other
matters. It is said that this substance is not new to good
farmers, as the manufacturers of oil from the seed of rape
continue to press it twice a year, whereas they for
many years never pressed it more than once; and that, besides,
the only used horses, where they now use life water, wind,
and fires.

The two principal reasons for making use of these sorts
of dressings are, in the very early spring, and in the early
part of the autumn, when the weather is rather
moist.

Top-dressings of the malt-juice kind, which chiefly con-
stitute of the infant sprouts of the grass, and probably contain
facultative matter, from the powerful nature of their effect
in some cafes, should, as in the other dust-top-dressings, be
made ufe of in as dry a condition as poifible, and without
undergoing any degree of fermentation. It is ufed in the
first of the above counties for wheat, in nearly the fame
quantities as other fuch matters, in fome places, at the rate
of twelve fhillings the quarter; and it works much the beft,
it is faid, on lands that are inclined to be rather wet. See
Grass-Land, Gypsum, Salt, &c.

Top-dressings of thefe kinds are often well suited to and
admirably beneficial for recovering and reftoring backward
and funned crops of different sorts, but particularly those
of the grain and grafs kinds.

Top-Folding, a term applied to the practice of feeding
down fome forts of fpring corn-crops with thep, as thofe
of the wheat, and occafionally the barley kinds, when too
rank or luxuriant. It is a method of practice which is
much in ufe in fome parts of Hertfordshire, and which is
faid there to be very beneficial in its effects; it fhould, how-
ever, be employed with caution in moft cafes, and conftantly
in the early stages of growth of the grain, as in the more
advanced ones it muft always be hazardous, and often hurt-
ful and destructive of fuch crops. The feeding down in
the cafes muft, of course, be nicely regulated, fo as never
to fuffer the crops to be too much or too little eaten by the
theep, as in either extreme the confequences will be injurious
to them.

Top-Up, a term ufed to signify the making up or topping
the roofs of hay or corn-flacks or ricks. It is likewife
fometimes made ufe of, in feeding and fattening buillocks,
to imply full feeding, or to finish highly, as with cake,
 oats, &c.

Top-Wood, in Rural Economy, the boughs or branches
which form the tops of timber, or other trees, or the wood
which they contain. See Timber and Trees.

Topan, in Ornithology, a name by which fome have
called the horned-beaked Indian raven, more ufonally known
by the name of the rhinoceros-avis.

Toparchy, formed from topan, place, and qyyn, go-
wermet, a little flate, or signory; confifting only of a few
cities, or towns; or a petty country, governed and poffefed
by a toparch, or lord.

Judza was ancienfly divided into ten toparchies. See
Pliny, lib. v. cap. 14. and Joseph. lib. iii. cap. 2. de Bel.
Jud. & lib. v. &c.

Procopius only gives the quality of toparchy to the king-
dom of Edessa; to Abgarus, the toparch or lord of which,
there is a tradition, that Jesus Chrift fent his picture, with
a letter.

Topayos, in Geography, a river of Brazil, which runs
into the river Amazon, with a fort at its mouth of the fame
name. S. lat. 2° 30' W. Long. 57° 6'.

Topavos, a favage tribe in Brazil, the chief and moft
numerous of the kind. They are anthropophagi; and if
a woman miscarry, will greedily devour the fatus. Strangers
to cultivation, they live upon fruits, and the animals they
kill. The Topayan language is very widely diftributed, and is
divided into feveral dialects. Their nakednefs, ferocity,
vinidive spirit, warfare, and whole mode of exiftence,
have been particularly defcribed by Lessing.

Topaz, in Mineralogy, a gem, called from Topazes,
la small illad in the Red Sea, where the Romans formerly
obtained a stone called by them the topaz, but which is the
cryftolite of the moderons. The topaz is faid to have been
ffirt found by Juba, king of Mauritania; but it was known
to the Hebrews before, as appears from the 118th Pfalm.
The most valued topazes are thofe of Saxon, Siberia, and
Brazil.

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The principal colour of the topaz inclines to yellow,
called by professor Jameson wine-yellow. The pale wine-
yellow pafles from various shades of yellow and greenish-
white to green. The dark wine-yellow pafles from orange
to cherry-red and even to blue, but the latter colour is very
rare. The topaz fometimes occurs maffe and in rolled
pieces, but more frequently cryftallized. The cryftals are
feldom very large. The primitive form of the cryftal, ac-
cording to Haüys, is a rectangular octahedron. The com-
mon forms of the secondary cryftals are varieties of the
oblique fide-vided prifm, terminated by four planes. The
fides of the prifm are longitudinally freaked, but the termi-
nating planes are smooth. When the edges of the cryftals
are truncated, the truncated planes are also smooth. The
Brazilian and Siberian topazes are more deeply freaked than
the Saxon. The external lufure of the topaz is fplendid,
the internal vitreous. The longitudinal fracture is small,
and imperfectly conchoidal; the cross fracture is ftraight,
and exhibits a lamellar ftructure. The topaz is tranfaent
or transparent, and refracts double: it scratches glafs, but is
refracted by fpinel; it is easily fragile. The specific
gavity varies from 3.434 to 3.641.

The Saxon topaz becomes colourles by a gentle heat,
and in this fate is fometimes fold for the diamond. A
strong heat deprives it of its lufter and transparency. The
Brazilian topaz, by exposure to a strong heat, becomes red;
and in a ftil higher temperature, violet-blue; it is then
fometimes fold for the ruby, or for pale fpinel. The topaz
is infufible by the blowpipe, but melts with the addition of
borax. The topazes of Brazil, Siberia, and Afa Minor,
become electrical by heating. The confluent parts of this
gem appear to vary considerably in different fpecimens.

<table>
<thead>
<tr>
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<th>Saxon</th>
<th>Brazilian</th>
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<tbody>
<tr>
<td>Silex</td>
<td>-</td>
<td>35</td>
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<tr>
<td>Alumim</td>
<td>-</td>
<td>59</td>
</tr>
<tr>
<td>Fluoric acid</td>
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The topaz is found in various parts of Europe and Afa,
and in South America. It occurs in large quantities in a
rock denominated by Werner the topaz rock, which is an
aggregate of maffe topaz, quartz, and fchoor, in which there
are frequently fmall cavities lined with cryftals of
these three fubfiances, and portions of lithomarge. This
rock is ftuated at Schneckenleit, in Saxony.

It occurs alfo in veins of quartz at St. Michael's mount,
in Cornwall, and with tin-flone at St. Anne's, in the fame
county. The topaz has recently been found, in large crys-
tals and roiled pieces, in alluvial foil in the primitive coun-
y of the upper part of Aberdeenfide; indeed it is ftated,
in the firft volume of the Wernerian Memoirs, that a fpec-
imen of topaz, weighing one pound three ounces eight dracuns
troi weight, has been obtained from that part of Scotland.
The largest fpecimen of Brazilian topaz in the museum of
natural history at Paris, weighs four ounces two gros. In
this museum there is alfo a superb Indian Dacchus engraved
on topaz. Tavernier mentions a topaz, in the poftelion
of the great Mogul, weighing one hundred and fifty-feven
caras, which coft 20,300. Reling; and Boetius de Boot,
in his trelife of precious flones, affirms to have been in
the cabinet of the emperor Rudolphus, whose phyfician he
was, a topaz above three feet long, and six inches broad.
Probable, it might be fome other flone a little tranfparent,
of a topaz colour. This gem was much prized by the
anceint. Yellow-coloured rock-cryftal has not been unfre-
quently impofed on the ignorant for topaz.

The oriental topazes, which have a deep rich orange-
colour, are highly valued at preftent. The Brazilian topaz
has
has not so rich and fine a colour as the former. The Saxon topaz is distinguished by its wine-yellow colour, and when cut, often exhibits a lustrous equal to that of the finest oriental varieties. The mountain-green varieties of topaz, which are found in Siberia, are included under the name of aqua marina. The Brazilian ruby and sapphire include the red and blue Brazilian topaz.

The topaz may generally be distinguished from all other minerals by the rhomboidal base of its crystals, the fracture, and the lamellar structure, and by the longitudinal streaks on its fide planes. It is less hard and heavy than yellow sapphire, and the latter does not become electric by heating. The same characters distinguish it from spinel; it is further distinguished from spinel by its double refraction. Green-coloured topaz is distinguished from beryl by its greater specific gravity, that of topaz being 3.5, and of beryl only 2.7. The latter cleaves in the direction of its lateral planes, which the topaz does not.

The following minerals have been denominated topazes, when colour was considered as affording the most certain character of precious stones.

1. Yellowish-white fapphire
2. Zircon
3. Chrysolite
4. Yellow beryl
5. Yellow rock-cryotal
6. Clove-brown and brown rock-cryotal

Names given to varieties of the topaz.

1. Mountain green topaz
2. Blue topaz
3. Yellow topaz
4. Wine-yellow inclining to red topaz
5. Red topaz
6. Yellowish-green topaz

See SAPPHIRE, RUBY, and GEMS.

A peculiar property of the topaz was discovered by Vauquelin, that the powder of this gem changes the syrup of violets to green if it remain in the liquor two or three hours, and this property is common to all the varieties of the topaz.

Mr. Canton, in 1760, found that the Brazil topaz has the electrical properties of the tourmaline.

Mr. Scott has attempted to counterfeit the topaz in glass, see GLASS resembling Topaz.

Mr. Scott has attempted to counterfeit the topaz in paste: Take crytal prepared, two ounces; ordinary minium, or red lead, seven ounces; put these into a crucible luted, and bake them twenty-four hours in a potter's kiln. If the mass is not sufficiently clear and fine, cover it up again, and give a second baking, and it will come out of a fine topaz colour. See Paste.

If we might believe the ancients, the topaz has very notable virtues; but those are now in discredit. See Gem.

TOPAZOS, or TOPAZUS, in Ancient Geography, an island placed by Pliny in the Red sea, 300 stadia from the continent.

TOPALS, in Geography, a town of Norway, in the province of Christianand; 32 miles N. of Christianand.

TOPE, in Ichthyology, an English name for a species of the fqualus, according to the Artedian system, the fqualus galeus of Linnaeus, distinguished from the other fquali by the nofrils being placed extremely near the mouth, and by certain foramina, or apertures, near the eyes. It is the fish called by the ancients ψαλος κυνος, galeus canis and caniculata. See SQUALUS.

TOPEL, or TAPL, in Geography, a town of Bohemia, in the circle of Pilfen; 56 miles W. of Prague. N. lat. 40° 58'. E. long. 12° 57'.—Alto, a river of Bohemia, which runs into the Egra, near Carlbad.

TOPERS HAT, a small island in a bay on the N. coast of New Guinea. S. lat. 3° 5'. E. long. 135° 33'.

TOPETINA, a town of Mexico, in the province of Mexico, at the mouth of a river near the Pacific ocean; 50 miles N.W. of Zacatula. N. lat. 18° 56'. W. long. 103° 44'.

TOPETRY, a town of Hindoostan, in the Carnatic; 50 miles S.E. of Tanjore.

Tophath, in Ancient Geography, a place in the land of Paradise, near the Dead sea. Josiah destroyed this place on the abolition of idolatry. Also, the fort of concretion found in the joints of gouty persons.

Tophus, in Natural History, is a species of sandstone, called also porus, mostly of a grey colour; but it is also found of other colours, as whitish, brownish, &c. according to the foil in which it is imbedded. It much resembles the pumice in texture, being rough and brittle, and composed of a large angular grit, cemented by a very coarse terreine crystalline substance. It is too soft to strike fire with steel. It is common in Italy and in Germany, where it is used for building, chiefly for cellars and turning arches. Da Costa's Hist. Fossils, p. 136.

TOPI, in Geography, a small island in the Mediterranean, near the N. coast of the island of Elba. N. lat. 42° 51'. E. long. 11° 30'.

TOPIA, a town of Mexico, in the province of Culiacan; 80 miles N. of Culiacan. N. lat. 25° 34'. W. long. 108°.

TOPIA, the chief chain of mountains in Spanish North America, commencing in the neighbourhood of Guadalaxara, and extending north to New Mexico, a distance of 150 leagues, or, according to our maps, more than 700 British miles; while the breadth of all the ridges is, according to Alcedo, sometimes 40 leagues, or 60 miles. This chain is of such a height as to be comparable with the Andes of Peru, and absorbs with precipices of the most profound and terrible aspect. It is almost universally denfely clothed with large and lofty pines, and other trees which afford fufficient to birds of very variegated and beautiful appearance. On the summit the cold is intense, but the temperature on the sides varies according to climate and exposure. It is the source of many rivers flowing into the Atlantic and Pacific, and subject, on the melting of the snow, to very considerable inundations. During the rains, which last from June to September, the rivers become terrible in their devastations to the distance of two or three leagues, and the mo的方向 become intolerable. Among the animals in these regions, are bears, lions, and tigers, as well as squirrels of various kinds. This chain is prolific in silver, yielding about a mark for each quintal of earth. It received its name from a savage tribe, which was converted by the Jesuits in 1550; but the mines, on account of their distance from the capital, have been mostly abandoned. The ridge of Topia is also called the "Sierra Madre," or mother-chain, and embraces the singular province of Nayarit, which remained
remained Pagan till the year 1718. Towards the N. the extent of this chain has not been precisely ascertained; but the Moquis, on the W. of Santa Fe, and under the same parallel, are positively claded among its inhabitants; and it probably forms one chain with that of Nabaja, and the Sierra Azul, or Blue Ridge, of Azlete, and the Rocky mountains of North-west America, sending off a branch called Genes on the W. of New Mexico, while on the E. of that province is the inferior ridge of Nambe. In the vice-
royalty, the general distance of the Topian chain from the western shore is about 140 British miles, but in some parts not above half that space.

Pinkerton.

TOPARI, in Botany, a name by which some authors have called the acanthus, or bear's-breech, a plant common in the gardens of the curious.

TOPIC, in Rhetoric, a probable argument, drawn from the several circumstances and places of a fact, &c. See ARGUMENT and LOCUS.

TOPICE, τόπικα, Topica, expresses the art or manner of inventing and managing all kinds of probable arguments.

The word is formed from the Greek, τόπος, of τόπος, place, its subject being the places, which Aristotle calls the fea of arguments.

Aristotle has written "Topics," and Cicero a kind of comment on them, to his friend Trebatius, who, it seems, did not understand them. But the critics observe, that the "Topica" of Cicero agree to little with those eight books of Topes which pass under the name of Aristotle, that it follows necessarily, either that Cicero was much mistaken, which is not very probable; or that the books of Topes, now attributed to Aristotle, are not wholly his.

Cicero defines topic, or topica, to be the art of finding arguments, "disciplina inveniendorum argumentorum." Rhor is sometimes divided into two parts; judgment, called also dialecitia; and invention, called topica.

TOPICS, formed from τόπος, place, or topical remedies, in Medicine, are commonly used for what we otherwise call external remedies, i.e., such as are applied outwardly to some particular diseased and painful part.

Such are plasters, cataplasms, blisters, unguents, flies, collyriums, &c.

Topes are such medicines, as by the smallness and mobility of their particles, attended for the most part with gentle action, are able to make their way into the surface of the parts to which they are applied, without eroding or wounding any of the foids; and those are justly called penetratin topics.

It may be a question how topics in medicine act. It is commonly said, that this or that medicine penetrates the pores; but the term is annexed to such expressions do not seem very distinct. Writers on the subject have seldom been at the pains to tell us why pores they mean. We have an essay on this subject in the Med. Eff. Edinb. vol. ii. art. 4, by Dr. Armstrong, who thinks that the effects of such medicines are not owing to the particles entering the orifices of the aborbed veins, nor to the opening of the exhalent vessels on the surface of the body by these medicines; nor will he allow the particles of penetrating topics to force their way through the coats of the vessels; but he supposes that subtle medicines are conveyed, by the exhalent vessels of the skin, to the parts of the smaller arteries, where the circulation is checked by obstruction.

The got is never cured by topics; they may afflige the pain for a time; but for a cure, the source of the evil must be attacked with internals.

TOPINAM BANANAS, in Geography, a town of Brazil, in the government of Para, on the river of the Amazons; 80 miles S.W. of Pausis. S. lat. 2° 42'.

TOPINAMBOSS, a considerable tribe of anthropophagi in Brazil.

TOPINO, a river of Italy, which runs into the Tiber, 5 miles S. of Perugia.

TOPIRA, in Ancient Geography, a town situated in the interior of Thrace. Pliny and Ptolemy.

TOPLITZ, in Geography, a town of Bohemia, in the circle of Leitmeritz, near which the Austrians defeated the Prussians in the year 1762; 14 miles W.N.W. of Leit-

meritz. N. lat. 50° 37'. E. long. 13° 51'.

TOPLIWOUDA, a town of Silisia, in the principality of Munsterberg; 7 miles N.W. of Munsterberg.

TOPOCZA, a town of Hungary; 14 miles S.E. of St. Cot.

TOPLUC, a town of Hungary; 20 miles S.S.W. of Podoliz.

TOPOBEA, in Botany, Aubl. Guian. 476. t. 189. N. lat. 32° 9'. Juif. 32° 9', is probably not generically distinct from Melas-
toma; see that article, and the natural order of Melas-
toma.

TOPODURITY, in Geography, a town of Hindoostan, in Myore; 24 miles W. of Tadmorer.

TOPOGRAPHY, formed from τόπος, place, and γράφειν, to write, a description or draught of some particular place, or small tract of land; as that of a city or town, manor or nentment, field, garden, house, cattle, or the like; such as surveyors let out in their plots, or make draughts of, for the information and satisfaction of the proprietors.

Topography differs from ephorography, as a particular from a more general.

TOPOLEVA, in Geography, a fortress of Russia, in the government of Caucasus, on the Urals; 40 miles N. of Grozny.

TOPOLITZA, a town of European Turkey, in Molda-
vania; 12 miles S.W. of Nittoci.

TOPOLITZAN, a town of Hungary; 52 miles N.E.
of Preßburg. N. lat. 48° 34'. E. long. 18° 25'.

TOPOLITZAN, (Kiz), a town and castle of Hungary; 12 miles N.W. of Baranow.

TOPOROW, a town of Austrian Poland, in Galicia; 35 miles N.E. of Lemberg.

TOPPARPOUR, a town of Hindoostan, in Odor; 25 miles E. of Baharatch.

Topping of Trees, in Rural Economy, the practice of cutting or lopping off the heads of them, especially of the different sorts of hedge-row trees, which, in this last cafe, is a disfiguring and disgraceful custom, now on the decline. See POLLARD TREES.

Where, however, this sort of work is to be performed, it should, in all cafes, be executed in the autumn, or very early in the spring months.

In topping fallen trees, the different parts should be cut out and put together into separate lots, as the large arms into one, the smaller branches into another, and the small brush, or faggot-wood, into a third. Thus the whole may be readily disposed of, or converted to its proper use.

Topping the Lifts, aboard a Ship, the same as halting the top-fall-lifts, by slackening one of them, and pulling upon the opposite one, so as to place the yard at a greater or less obliquity with the masts. See Lifts.

Topping-Lifts, a large and strong tackle, employed to suspend or top the outer end of a gaff, or of the boom of a main-fall and fore-fall; such as are used in briggs, schooners, &c.

Falconer.
TOPRACK-KALA, in Geography, a town of Turkish Armenia; 6 miles S. of Kars.

TOPRACK-KALAHII, a town of Asiatic Turkey, in the province of Diarbekir; 60 miles S. of Moufl.

TOPSAIL ISLET, a channel between two small islands off the coast of North Carolina. N. lat. 34° 18'. W. long. 77° 48'.

TOPSFIELD, a township of Massachusetts, in the county of Essex, containing 815 inhabitants; 24 miles N. E. of Boston.

TOPSHAM, a market-town in the hundred of Wonford, and county of Devon, England; situated at the confluence of the rivers Clyd and Exe, 3 miles S. E. from Exeter, and 170 miles W. S. W. from London. Land. speaking of this town, says, "Here is the great trade and rode for shippers that ush this haven, and especially for the shippers and merchant-mannes goodes of Exeter. Men of Exceiter contede to make the haven cum up to Exceeter self; at this time shippes cum not further up but to Apham." The manor was the property of the Courtenays, earls of Exeter, of whom procured for the town the privilege of a market, and an annual fair, which are still held; the market-day being Saturday. The town confisits principally of one long street, of irregular breadth, chiefly extending north and south along the eastern bank of the Exe. Many of the houes are handsome, but the greatest number have but a mean appearance. The southern extremity, called the Strand, is the most pleasant, the river flowing within a short distance of the houes, and is chiefly inhabited by persons of fortune; the view from it is extensive and beautiful. The quay is spacious and convenient, and now belongs to the chamber of Exeter, who purchased it about the year 1778. Most of the inhabitants are employed in the shipping busines; the total number, as returned under the act of the year 1811, was 2871; the number of houes was 620. The church stands near the centre of the town, on a high cliff, which affords an extensive view of a noble river, distant shipping, churches glimmering through groups of trees, a fertile vale, and a fine range of mountains, rising above each other in beautiful perspective, as far as the eye can reach.

In the vicinity of Topsham is Nutwell, the seat of lord Heathfield, nephew and successor to sir Francis Drake. According to Ridlon, the manor-houe was a cafile, till lord Dinham, about the time of Edward IV., converted it into a flatly dwelling-houe. Sir Francis Drake made many alterations, and it has been newly rebuilt by the present poffeflor on a more ample scale, and at a very great expence.


TOPSHAM, a township of the province of Maine, in the county of Lincoln, containing 1271 inhabitants; 156 miles N. E. of Boston.—Allo, a town of Vermont, in the county of Orange, containing 814 inhabitants.

TOR, a sea-port of Arabia, on the coast of the Red sea, formerly a place of confluence, and strong, but at present in a ruinous state and without a garrison. Near it is a ruined cafile, inhabited by the Arabs; the Greeks call this place "Raitho," which might have its name from being inhabited by some of those people called by Ptolemy "Raitheni," towards the mountains of Arabia Felix; it is inhabited by Arabs, and about twenty families of the Greek church. The monks of mount Sinai have a convent here, to which they have sometimes retired when they could not conveniently stay at mount Sinai; only one priest resides in it for the service of the church. About a league north of Tor is a well of very good water, and about it are a great number of date-trees, and several springs of salt-water, especially to the south-east, where the monks have their garden. Near it are several springs, and a bath or two, which are called "the Baths of Mofes;" the Greeks as well as some others are of opinion that this is Elim. The greatest curiosities of Tor are-the productions of the Red sea; the shell-fish of it are different from those of the seas to the north of it; but what are most peculiar to it, are the several flone vegetables, the madrepore, a sort of coral; the fungii, or mushrooms; and the red pipe coral. In 1540, Tor was taken by the Portuguese. N. lat. 28° 10'. E. long. 33° 37'.

TOR, a town of Africa, in the country of the Foulahs. N. lat. 16° 30'.

TOR ALBA, a town of the island of Sardinia; 20 miles N. E. of Algieri.—Allo, a town of the island of Sardinia; 13 miles S. of Orifiganni.

TOR DI CANS, a town of Naples, in the province of Bari; 9 miles S. E. of Monopoli.

TOR Pivot, or Hope's Nofe, a cape of England, on the coast of Devonshire, forming the north point of Torbay. TORA, a town of Egypt, on the Nile; 8 miles S. of Cairo.—Allo, a town of Naples; 9 miles N. E. of Sezza.

TORACA, or BUTUA, a province of Africa, in the empire of Mocaranga.

TORDOS, or BULL-FIGHTING.

TORAITO, in Geography, a town of Thibet; 30 miles N. E. of Tchontori.

TORAL, El, a sea-port of Chili. S. lat. 27° 55'.

TORALLIBA, in Ancient Geography, an island of the Indian sea, near the mouth of the river Indus, and 9 miles from the island of Bybaga. Pliny.

TORAR, in Geography, a town of Hindooflan, in the circur of Surgooga; 30 miles E. S. E. of Surgooga.

TORBAY, is a commodious bay or sea-road, five miles from Dartmouth, on the coast of Devonshire, England. It is formed by two capes, that on the east called Bob's-Nofe, that on the west, Berry-Head. Its general shape is semilunar, enclosing a circumference of about twelve miles. The winding shores on both sides are screened with great ramparts of rock; between which, in the central part, the ground from the country, forming a gentle vale, falls easily to the water's edge. Wood grows all round the bay, even on its rocky sides, where it can get footing and shelter; but in the central part with great luxuriance. This noble bay has often afforded protection to the fleets of England, which, in their full array, ride safely within its ample bosphorus. Beyond the bay is a remarkable place called Kent's-Hole, confisting of many caverns entered by subterraneous passages, but having only one external entrance.

Tor Abbey, the seat of George Cary, esq. is finely situated amidst some ancient and noble trees, and commands an interesting prospect of Torbay, and the rocky tors in the vicinity. The house is mostly modern; though some parts of the old abbey are still preserved. It consists of a centre and two wings; one of which is connected with a cellaret gateway, having octagonal towers and battlements. Beyond this gateway is a large barn, which formerly belonged to the Abbey. It is overgrown with a venerable mantle of ivy, and decorated with loop-holes, and numerous buttresses. The ancient religious house of this place was erected by William, lord Brieure, or Bruer, in the time of king John, and endowed by him with considerable revenues, which were afterwards much augmented by his son. It was appropriated for canons of the Premonstratensian order. After the Bruers, Tor Abbey...
Abbey came into the Mohun family, who were succeeded by the Ridgeways, and then by the Crys, who now enjoy it. At the dissolution, the revenues amounted to 396l. 112.

Gillpin's Observations on the Western Counties, 8vo.


Toreay, a bay of the North Atlantic, on the east coast of Newfoundland. N. lat. 47° 48'. W. long. 52° 20'.—Alto, a town and bay on the south coast of Nova Scotia. N. lat. 45° 38'. W. long. 61° 15'.

Torebek, a town on the south coast of Hispaniola; 9 miles N.W. of Vache island.

Torbia, a town of France, in the department of the Maritime Alps, called by the Romans Trophea Augufi, with an ancient Gothic tower. In the environs are found many remains of monuments erected by the Romans, trophies and fragments of a statue of Augustus; 7 miles E. of Nice.

Torbido, Francesco, called Il More, in Biography, was born, about the year 1500, at Verona, and perhaps rather before it, as he is said to have had, for a short time, the advantage of receiving instruction from Giorgiome. He afterwards became the pupil of Liberale, and his own style is a compound of those of his masters, partaking of the glow of the former, with the elaborate finish of the latter. His principal occupation was in portrait, yet he left several historical pictures of considerable merit. Amongst them are some frescoes, representing the life of the Virgin, in the cathedral at Verona; and a picture in oil of the Transfiguration, in the church of S. Maria Maggiore, at Venice. He died at the age of 81, but the exact date is unknown.

Toribo, in Geography, a river of Naples, which runs into the Crate, near Bifignano.

Toribiscon, a town of Spain, in the province of Granada; 14 miles N.E. of Motril.

Torbole, a town of the Tyrol, on the north-east coast of lake Garda. In 1796, this town was taken by the French; 17 miles N. of Garda.

Torbus. See Tuburbo.

Torc, a mountain of Ireland, in the county of Kerry, on the south side of Lough Lame, whom the southern part is called Lough Torc.

Torcello, a small island in the gulf of Venice, with a town of the same name, the see of a bishop, suffragan of Venice. The town of Torcello is in a flourishing state, which it owes to the inhabitants of Alto, who were driven out of that place by Attila, and fled hither; it has also been the see of the bishop of Alto, in consequence of the bishop Paolo having emigrated to the first-mentioned place. His successor, Mauro, or Maurizio, obtained from pope Severino the confirmation of his new see, and built here several churches, together with the elegant monastery S. Giovanni di Torcello. More churches were built by his successor Giuliano; and Diadato, the fourth bishop, erected finally, in the year 697, the principal church of Santa Maria; which was rebuilt from the ground, in the eleventh century, by the bishop Orso; 3 miles N. of Venice.

Torch, Teda, a sort of luminary, properly a flick of fir, or other resinous and combustible matter, as pine, linden, &c., more or less thick, and long; encompassed at one end with six wax candles, which being lighted, yield a kind of gloomy brightness.

Torches are used in some church ceremonies, particularly at the processions of the holy sacrament in the Romish church, and at the interments of the poorer people.

Formerly they were used at the funerals of those of the first rank; but tapers and flambeaux are now introduced in their stead; and frequently also called by their name.

Torchil-Thistle, in Botany. See CEREUS.

Torchenes, in the Manuge, a long flick with a hole at the end of it, through which a strip of leather is run, the two ends of which being tied together, serve to straighten and closely tie up a horse's nose as long as the flick is fastened upon the halter or bridle. This is done to keep the horse from being unruly when he is drest, or upon any other occasion.

Torchiara Rocca, in Geography, a town of the duchy of Parma; 5 miles S. of Parma.

Torchilli, Jonas, in Biography, the descendant of a respectable family in Iceland, was born in the district of Guldbringe in 1667, and in 1718 he became the bishop of Copenhagen, from whence he proceeded to Holstein, completing his studies at the university of Kiel. In 1728 he returned to Iceland, and became rector of the school of Skalholt, which he resigned in 1736, quitting his country on account of some troubles which ensued from his speaking his sentiments too freely. At Copenhagen, whither he withdrew, he made some unfavourable reports of the clergy in Iceland, and was sent thither as secretary to Harboe, afterwards bishop of Zealand, who was deputed to examine the state of the Iceland Church. Having finished this business, Torchilli retired to Copenhagen, and died there in 1759.

Torre de' Medici, in Anatomy, a name given to one of the sinews of the brain. See Vein.

Toricello, a town of France, in the department of the Lower Seine; 3 miles S. of Arques.

Torda, or Torenburg, a town of Transylvania, famous for its salt-works. The Hungarian language is said to be spoken with the greatest purity in this town; 15 miles W.N.W. of Clujenburgh. N. lat. 46° 42'. E. long. 23° 24'.

Tordesilhas, a town of Spain, in the province of Leon; 5 miles W.S.W. of Rio Seco.

Tordera, a river of Spain, in Catalonia, which runs into the sea, near Blanes.

Tordesillas, a town of Spain, in the province of Leon, on the Duero; 13 miles S.W. of Valladolid.

Tordino, a river of Naples, which so-called Abruzzo Ultra, falls by Teramo, and runs into the Adriatic, N. lat. 42° 40'. E. long. 14°.

Tordino, in Ornithology, a name by which the Venetians call a bird of the dark kind, common in their markets, and called by authors Spinellus.

Tordo Marino, the name of a bird of the flaring kind, called also the cadiglaffo maggiore, or ruticilla major, and by the Austrians the Klein-Ralline. Aldrovandus has named it the merula fasciata, or rock-blackbird. It is of the size of our flaring, and much resembles it in figure; its breast is greyish, and has a black transverse streak, and behind that the whole is of a yellowish hue; its head and back are of a blackish hue, with some light variegations of grey, from the
tip of the feathers being of that colour: the tail is long and of a reddish-orange colour, and the under-feathers of the wings are of the same hue; the females are of a less elegant colour than the males, viz. a mouze-colour, variegated with white on the back, and sih-colour on the belly: what is yellow in the male birds, is also very pale in the females; it is not uncommon in Germany, and may be taught, like the starling, to imitate the human voice.

**TORDYLIUM**, in *Botany*, of the Greeks, probably the very plant of Dioscorides, is supposed by Linnaeus to owe its name to the neat orbicular figure of its seeds, which seem as if artificially wrought, or *turned*. The same idea is hinted by Bodezus a Stapel, in his edition of Theophrastus, 1125; but Linnaeus appears to have been more particularly led by Ambrobinus, to resolve the word into *torn*, a turning *labes*, and *torn* in *tornum*. The latter seems superfluous. De Theis is diffused with this etymology.


*Gen. Ch.* General *Umbel* of many unequal rays; *partial* of many unequal very short ones, flat. General *Involucrum* of several slender undivided leaves, mostly as long as the umbel; *partial* unequal, exceeding the partial umbel in length at its outside. *Perianth* of five teeth. *Cor. Universal* irregular, radiant; all the florets fertile; *partial* of the *life* with five equal petals, whose indented points render them heart-shaped; *of the radius* similar, but its outermost petals are very large, and deeply divided. *Stam.* in all the florets. *Filament* five, capillary; *anthers* simple, roundish. *Pil:* in all the florets. *Germen* roundish, inferior; *styles* two, small, erect; *figmata* obtuse. *Peric.* Fruit nearly orbicular, compressed, crenate at the edge, separate into two parts. *Seed:* two, nearly orbicular, almost flat, with a thickened, finely crenate, margin.


Obs. Linnaeus points out the presence of efficient flaments and pistils in all the florets as the most important difference between this genus and *Caucalis*, see that article. But the seeds of the latter being ovoate, frisiated, and befit with rigid bristles, afford, as he afterwards judiciously thought, a more constant and satisfactory character.

1. *T. syriacum*. Syrian Hart-wort. Linn. Sp. Pl. 345. Willd. n. 4. Ait. n. 4. Jacq. Hort. Vind. v. 1. 21. t. 52. Rivin. Pentap. t. 13. (T. minus syriacum, feminis limbo granulato; Morif. sect. 9. t. 16. f. 5. Gengidiun latifolium; Ger. Em. 1042.)—Partial involucrum many times longer than the nearly feillary flowers.—Native of Syria and Caria. A hardy annual in our botanic gardens, flowering in July. The whole herb is hoary with short close hairs, which render it soft to the touch; *stem* twelve or eighteen inches high, angular, leafy, somewhat branched, zigzag, spreading. *Leaves* stalked, pinnate, of three or five broad, obtuse, rounded, notched leaves; the odd one large, slightly three-lobed, an inch and half long. *Umbel* lateral and terminal, on long, spreading, furrowed stalks. *Flowers* white, few and small; but the leaves of the *partial involucrum* are remarkable for being about an inch in length, obovato-lanceolate, leafy, exceeding those of the *general one in size*. The *seeds* are bristly and viscid, with a crisped margin.

2. *T. officinale*. Official Hart-wort. Linn. Sp. Pl. 345. Willd. n. 2. Fl. Brit. n. 1. Engl. Bot. t. 2442. Ait. n. 2. Sm. Fl. Grac. Sibth. t. 257; unpublished. (*Seefieli criticism minus*; Bauh. Pia. 161; Ger. Em. 1050; Caucaus minor, pulchro feminine, five Belloni; Ban. Hift. v. 3. p. 2. 84. Small Hartwort; Petiv. Herb. Brit. t. 24. f. 6.)—Partial involucrum full as long as the flowers. *Leaflets* ovate, cut, crenate. Radiant petals two together, unequally lobed.—Native of the north of France, Italy, Sicily, and the Levant. Dr. Sibthorp found this plant in various parts of Greece and the neighbouring islands. He judged it, with great probability, to be the identical *T. officinale* of Dioscorides. As a British plant it rests on the authority of Doody, who gathered specimens about Illflworth, and communicated them to Ray. The latter could not mistake the species, but he hints, in his Synopt, ed. 2. 182, that the seeds probably escaped from some garden. This is an annual, more erect than the foregoing, but, like that, downy, not bristly. The *leaflets* are ovate, sometimes rather oblong, sometimes roundish-heartsbaped, from three to nine; stalked and lobed in the larger more luxuriant leaves, but generally unequally crenate only; the upper ones are lanceolate or oblong. *Flowers* large, white or pale flesh coloured, numerous; the two outer petals, especially of the marginal flowers, remarkably radiant, one lobe of each being disproportionately large. General and partial involucrum of narrow awl-shaped leaves, the latter smallest. *Seeds* smooth, with an elegant, broad, thick crenate border. This plant was formerly cultivated for the fake of its seeds, supposed to promote urine and other excretions, but now out of use. The *T. officinale* minimum, Column. Echir. 122. 1. 125. f. 1, seems to us a starred variety, different, as Jacquin well remarks, in Hort. Vind. v. 3. 2, from the following, though he errs in taking it for the true *T. officinale*, which is what he originally so called. See the next species.

3. *T. apulum*. Smaller Hart-wort. Linn. Sp. Pl. 345. Willd. n. 4. Ait. n. 4. Prodr. Fl. Grac. n. 631, excluding the synonyms ofrivin. Pentap. Irr. t. 2. Jacq. Hort. Vind. v. 1. 21. t. 52. Spreng. n. 3. (T. humble; Desfont. Atlant. v. 1. 235.; f. 58.)—Partial involucrum shorter than the flowers. *Leaflets* crenate; the upper ones narrow. Radiant petals solitary, of two equal lobes.—Native of cultivated fields in Italy, Barbary, and Greece. A smaller plant than the foregoing, annual like that, but with several *flaments*, whose lower part, as well as the teeths of each *footsale*, is *thyagar, with long white woolly hairs. The *leaflets* of the lower leaves, about seven, are rounded, variously jagged and notched; those of the upper still more various in figure, narrow, mostly wedge-shaped, often deeply, and very acutely, three-lobed. *Umbel* of usually five rays, sometimes more, four times as long as the *general involucrum*. *Flowers* white, radiant, but not in the manner of the foregoing, they having but one greatly enlarged petal, whose two obovate lobes are nearly equal. The *seeds* have a broader, frisiated, granulated disk, with a thick, but not so broad, border as in *T. officinale*. The synonyms of Bauhin, *Seefieli criticism minimum* are as well those of Tournfort, Ray and Morison, cited in Sp. Pl. and Hort. Clus., all depending on Columba's plant mentioned unter our last species, are to be transferred to that.

Carniola. This appears to be nearly related to the last, nor can we discern why professor Sprengel marks it as a doubtful species. We have seen no specimens. The faithful Scopoli describes it as about a foot high, with uniform leaves, composed of two pair of obliquely ovate, or half-heart-shaped, sely, notched leaves, and a terminal one, broader, deeply three-lobed. The flowers are red, or pink. Fruit oval, compressed, with a thick, bident border, not described as creatal, whence perhaps the doubts of professor Sprengel.

5. T. maximus. Great Hart-wort. Linn. Sp. Pl. 434. Willd. n. 5: Fl. Brit. n. 2. Eng. Bot. t. 1173. Jacq. Auctr. t. 142. Scop. Carn. v. 1. 195. Turn. Inf. 320. (Tordylum; Rivin. Peutap. Irr. t. 1. Sefelii cesticae majus; Bauh. Pin. 161. Ger. Em. 1052. Caecalaiss major; Cluf. Hill. v. 2. 201. Ger. Em. 1021, bad. Heeracleum Tordylum; Spreng. Prodr. 12.)—Umbels dense. Leaflets lanceolate, deeply serrated. Stem rough with deflated bristles; umbels and fruit with creetal ones. Native of wallt ground, banks and hedges, in Italy, Switzerland, Germany, and, though very rarely, England, flowering from June to August. It has long been observed under the hedge on the north side of the parks, at Oxford; and was gathered by Mr. Gotobed near Eton. Dr. Sibthorp met with this plant in Greece and about Constantinople. The root is annual, tapering. Stem three or four feet high, creetal, branched, leafy, furrowed, clothed all over with short, rigid, punctate bristles, which point strongly downward; while the rays of the umbels, the involucral leaves, which are all short and awl-shaped, and the germen, as well as fruit, are equally rough, with creetal bristles. The lower leaves consist of about five broad, ovate leaflets, deeply and irregularly notched; the upper of about three elongated narrow ones, strongly serrated; all rough with clofet-preffed rigid hairs. Flowers small, reddish, with unequal petals, but not strikingly radiant. Calyx-teeth elongated, unequal. Fruit nearly orbicular, bristle, with a thick, pale, rugged border, less crispated than in the first three species, and a slightly tchared ribbed disc. The preference of a general as well as partial involucrum, does not agree with Sprengel’s character of Heeraeleum, nor do the seeds answer to his description of that genus.

6. T. peregrinum. Oriental Hart-wort. Linn. Mant. 55. Willd. n. 3. Ait. n. 3. (Conium dichotomum; Deesfont. Atlant. v. 1. 246. t. 66. Caecaliss Hispanica; Camer. Hart. v. 37. t. 11. Cochryz peregrina; Spreng. Prodr. n. 11, and Cichotoma; Ridl. n. 12.)—Leaves repeatedly compound, smooth, with linear decurrent segments. Fruit elliptical, furrowed, with crispated ribs and margin.—Native of the Levant. Herb annual, smooth, with a branched spreading stem, and very finely divided, three compound leaves. General umbel of scarcely more than three or four flat smooth rays; partial small and dense. General involucrum of one or two small, ovate, pointed, white-edged leaves; partial of several similar unequal ones. Flowers small, scarcely, if at all, radiant, white, or slightly reddish. Fruit thick, almost fessile, more elliptical and acute than in the root of the genus, having a thick, crispated edge, and three greatly elevated, less sharply coriaceous, ribs at each side. The genus of this plant is certainly very ambiguous. It might perhaps be safely referred to Comium, with which its habit more accords, especially as the fruit answers but indifferently to the idea or definition of a Tordylum.

T. latifolium, Anthiricus and nodifolium of Linnaeus are now generally referred to Caecaliss. Sprengel however has restored the genus Torellis of Adanson and Gartner; see that article, to which the latter belong.

We shall have occasion to speak of the difficulties frequent in the generic distribution of this tribe, when we come to the article Umbelliferae.

TORE, TURUS, in Architecture, a large round molding, used in the bays of columns.

Daviler derives the word from the Greek, tore, a cable, to which it bears some resemblance; or from the Latin tornus, a bed, as being supposieto represent the edge of a bed or quilt, swelled out with the weight of the incumbent column.

The tore is also called geno latum, and tomod. It is the bigger that distinguishes the torus from the atlas.

The bafes of Tuscan and Doric columns have but one tore, which is between the plinth and the fillet. In the Attic base there are two; the upper, which is the smaller; and an under, or bigger.

TOREE, in Geography, a cirear of Bengal, bounded on the north by Palamow, Koonda, and Ramgru; on the east by Ramgru; on the south by Chuta and Nagpoon; and on the west by Palamow; about 32 miles long, and 24 broad. Toree is the capital.—Also, a town of Hindostan, and capital of a cirear of the same name, in Bengal; 210 miles W. of Calcutta. N. lat. 22° 37’. E. long. 84° 54’.

TOREK, a town of Hungary, near the Thysfyle; 40 miles W.S.W. of Debreczin.

TORELLI, CELIO, in Biography, a learned jurist, was born at Fano in 1489. Having studied Greek and Latin at Ferrara, he graduated at Perugia, where he studied law. The last respectable office of magistracy, which he occupied, was that of grand chancellor and first secretary to the dukes of Tuscany, Cosmo, and his son Francesco. He was also advanced to the rank of Florentine nobility, and the title of senator, and was consul to the academy of Florence, where he died in 1576, universally esteemed for his mental and moral qualities. He amused himself with polite literature, in which he was a proficient, and with writing Latin and Italian poetry; but the subject of his serious study was jurisprudence. He was the author of several works on the law; but he was principally engaged in preparing a new and correct edition of the Pandects, availing himself of the Pifan or Florentine MS. This magnificent edition appeared from the Torre’tot pref in 1555, in three large volumes folio. His son Francesco was his associate in the labour of this work; but the son died before the father. Gen. Biog.

TORELLI, FUMONTO, a poet and man of letters, and count of Montechiarugola, was educated at Padua, where he resided eleven years. Upon his return to his native place he married, and in 1584 was sent on a mission to Spain; and having succeeded in the object of it, he afterwards employed himself chiefly in literary compositions. His works were numerous, among which we may reckon a treatise, “De Debito de Cavalieero,” 1556; five tragedies, viz. “La Merope,” “Il Tancredi,” “La Galatea,” “La Vittoria,” and “Il Poldoro.” His MSS., which were also numerous, are preserved at Reggio. He died in 1608. Tiraboschi. Gen. Biog.

TORELLI, GIUSEPPE, a native of Verona, member of the Philharmonic society, and principal violon of San Petronio, at Bologna. In 1701 he was concert-master at the court of Anfipach, and his performance on the violin acquired him great reputation. He was a voluminous composer for that instrument. His productions, however, are so superannuated, as almost to cease to be music; for having little original melody, and no uncommon stock of harmony or modulation, there is nothing left to make amends for the want of novelty and elegance. This composer, besides the numerous works which he published for violins during his life,
life, of which the titles are recorded in Walther, left behind him an unedited work, which was published in 1709 by his brother, Felice Torelli, after the author’s decease, under the title of “Concerti grossi con una pantoffale per il santissimo natale,” consisting of twelve concertos in eight parts. These concertos have been thought the best of his productions, and the model of grand concertos for a numerous band. Quantz, Arte de la Flute.

TORELLO, in Geography, a town of Naples, in Principato Ultra; 3 miles W.N.W. of Conza.—Also, a town of Spain, in Catalonia. In the year 1694, a battle was fought near this town between the French and Spaniards, in which the former were victorious; 6 miles N. of Vique.

TORENA, a town of New Navarre; 100 miles S.S.E. of Cafa Grande.

TORENA, in Botany, was so called by Linnæus, after his pupil, the Rev. Olof Torens, or Toreen, chaplain of a ship in the service of the Swedish East India Company, who studied at Upsal, in order the better to qualify himself, as a naturalist, for a voyage to China. He communicated to his great botanical preceptor many scarce plants, and addressed to him a series of letters, descriptive of the voyage, in which, though various other subjects are touched upon, natural history makes a principal figure. These were published at the end of Olbeck’s Voyage (see Osbeckia) and translated with that work into English, by Dr. Forster. Soon after they were written, the author died, apparently at an early age, near Nafinge, in Sweden, Aug. 17, 1753.—Linn. Gen. 311. Schreb. 407. Willd. Sp. Pl. v. 2, 265. Mart. Mill. Dict. v. 4. Brown Prodr. Nov. Holl. v. 1, 440. Juff. 122. Lamarck. Illust. t. 1, 523—Cladis and order, Didynamia Angiosemia. Nat. Ord. Perianate, Linn. Scrophularia, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, tubular, angular, permanent, two-lobed; the lips toothed, unequal. Cor. of one petal, ringlet, twice the length of the calyx; its upper lip nearly entire; lower three-cleft, the middle segment most prominent. Stam. Filaments four; the two uppermost simple; two lowermost longest, with a lateral branch or tooth; anthers of two vertical, oblong, rather distant lobes, converging in pairs, their respective lobes closely contiguous. Petal. Germen superior, elliptico-oblong; style thread-shaped, swelling upwards; stigma of two parallel flat plates. Peric. Capsule elliptico-oblong, of two cells, and two undivided valves, with a parallel unconnected partition. Seeds numerous, roundish, attached to the partition.


Obi. We take our characters of this genus principally from the original Linnæan species, and therefore hesitate to admit, after the example of our learned friend Mr. Brown, any species with a regular five-toothed calyx, such as Capsella crucifera, Linn. and Torenia seabra of Brown. We also omit T. fiaccida of the last-mentioned author, and Anthirrhinum hexandrum of Forster, because we have not seen them. The strange name of the latter probably alludes to the lateral branches of two of the filaments, by which therefore it should seem to be a good Torenia. Yet these appendages appear to be wanting in T. cardifolia of Roxburgh, if we may trust the figure, nor do we find them clearly in our T. obtusifolia. The two-lobed tubular calyx seems to us the most important mark.

1. T. asatica. Smooth Creeping Torenia. Linn. Sp. Pl. 362. Willd. n. 1. Obeck’s Travels, English edition, v. 1, 337. Lamarck f. 1. (T. glabra; Obeck It. 210. "Kaka-pu; Rheedee Hort. Mal. v. 9, 103. t. 53")—Smooth, with a creeping stem. Leaves stalked, ovate, acute, serrated. Native of China, in watery places, flowering in September. The whole herb is smooth, except a few hairs about the joints, and at the insertion of the leaves. Stem a span long, branched, square, leafy, creeping by means of fibrous roots, which seem to be perennial. Leaves hardly an inch long, opposite, smooth, with shallow serrations; on flanks about half their own length. Flowers axillary, solitary, opposite; on long simple stalks, purple, large and handsome, not unlike those of Maurandia; see that article. The small teeth, or points, of the calyx are narrow, close together, and its angles are winged.

2. T. bifurca. Hairy Torenia. Willd. n. 2. Lamarck f. 2. Mart. Mill. Dict. n. 2.—Hairy, with an erect stem. Leaves ovate, serrated, on short stalks.—Native of China. Linnæus thought it a variety of the first species, but it is much more hairy, with smaller flowers; the calyx scarcely winged, except at the very base. The teeth of that part appear to become more deeply separated as the capsule enlarges.

3. T. ciliatis. Fringed Torenia.—Leaves ovate, acute, slightly hairy, serrated, on long stalks. Angles of the calyx broadly winged, fringed.—Native of the Nicobar islands. Communicated by the Right Hon. Sir Joseph Banks. The stem appears to be erect. The leaves are an inch and half long, strongly serrated, slightly beak-shaped with hairs, oblique at the base. Footstalks nearly half the length of the leaves, channelled, hairy. Flowers opposite, about as large as the first species. Calyx remarkable for its broad wings, fringed with short upright hairs; its teeth slender and hairy.

4. T. cordifolia. Heart-leaved Torenia. Roxb. Corom. v. 2, 32. t. 161. Mart. Mill. Dict. n. 3.—Nearly smooth. Stem branched, spreading. Leaves ovate—heart-shaped, serrated. Calyx without wings.—Native of the East Indies. Found by Dr. Roxburgh, in the moist pasture lands about Samulecata, flowering during the cold season. The root is fibrous, simple, apparently annual. Stem erect, six inches high, square, leafy, bushy, with numerous crores branches. Leaves an inch long, paler beneath, on flanks half that length. Flowers about the tops of the branches, axillary, on long flaccid stalks. Calyx rather swelling, angular, but defoliated of wings, two-lobed, with five small teeth. Corolla pale purple, twice the length of the calyx. Staminata, according to Roxburgh, without any lateral branch or tooth.

5. T. obtusifolia. Blunt-leaved Torenia.—Leaves roundish-ovate, obtuse, stalked, wavy, somewhat toothed, smooth. Stem creeping. Lips of the calyx unequal, abrupt.—Sent from Mexico by Mutis to Linnæus. The species were laid into the genus Gratiola, but seem never to have been described. The whole herb is smooth, branched, succulent, creeping; in habit not unlike Veronica Beccabunga, like which plant it seems to grow in swampy places. Leaves ribbed, broad, an inch long. Flowers axillary, stalked, solitary, the five of T. cardifolia. Calyx angular, not winged, oblique at the mouth; its upper lip prominent, obtuse, slightly emarginate; lower much shorter, abrupt, with three small distant teeth. Corolla twice the length of the calyx, white or yellowish; internally somewhat hairy. The insertion of two of the flaments into the upper part of the corolla agrees with T. asatica; we are not sure whether the other pair has any lateral teeth, but there is some appearance of such appendages, conglutinated as it were.
were with the corolla. The authors are roundish, combined in pairs. *Germ in ovate, pointed. Stigma between the authors, of two thin plates. The parts of the flower in our specimen scarcely admit of sufficient examination to determine the genus of this plant with certainty, but it appears to agree with *Triticum better than with any other.

**TOR**

ToRENTO, in Geography. See York.

**Toreumatography**, a Greek term, signifying the knowledge, or rather description, of ancient sculptures, and baso-reliefs.

The invention of toreumatography is owing to Phidias, and its perfection to Polycletus: the Greek gravers have let a great deal of light into the toreumatography.

**TorUJice**, from the Greek *τερόμοιος*, lath, of *τερέμος*, terebro, perforo, that part of sculpture called turning.

**Torfaeus, Thorndus, or Thorod Torsen**, in Biography, an eminent historian, was born in a small island called Engoe, on the southern coast of Iceland; and having laid the foundation of his education at the school of Skalholt, he spent three years, from 1654 to 1677, in the university of Copenhagen. In the spring of 1679 he was captured, in a voyage from Christianland on board a Dutch vessel, by a Swedish cruiser, and carried to Jutland. Upon his release and arrival at Copenhagen, he was appointed the king's interpreter for Icelandic antiquities. In 1662 he visited Iceland, for the purpose of collecting old MSS.; and in the accomplishment of his object was much encouraged and assisted by the bishop of Skalholt. In 1663 he returned to Denmark with a variety of valuable materials; in 1664 he was made secretary to the diocetic of Stavanger; and in the following year he married: but in 1667 he resigned his office, and was appointed antiquary to the king. Upon the death of his father and brother he made a voyage to Iceland, for the purpose of securing his property; and in the same year he went to Amsterdam; but on his return he was shipwrecked at Skagen, and obliged to travel to Aarhus by land. Embarking for Zealand, he encountered a storm near the island of Sanmoe, and landed at Sanas, where he was wantonly attacked by an Icelandar, and in self-defence killed his antagonist. Upon this he was arrested, tried, and condemned to suffer death. Upon an appeal first to a superior court in 1672, and afterwards to the king, it was ultimately determined that he should pay a fine of 100 dollars, and be released. The king, however, was displeased, and deprived him of his salary and office; upon which he retired to Norway, where he lived without any employment till the year 1682, when he was appointed royal historiographer and archivist in the consistory, with a stipend of 600 dollars per annum. Thus circumstanced, he commenced his history of Norway; but in 1706 he was obliged to desist from the prosecution of it by a severe illness, after he had brought it down to the union of Calmar, and to resign the completion of it to professor Richter. Having lost his wife in 1695, he married a second in 1709; and in 1719 died without issue. Torfaeus was a man of considerable learning, and particularly conversant with ancient history and antiquities; and he was much respected by the northern sovereigns, Frederick III., Christian V., and Frederick IV. His works, actually published and left in MS., were very numerous. The collection of his MSS., relating more especially to the history of Iceland, amounts to several volumes folio, and is preserved in the king's library at Copenhagen. Gen. Biog.

In connection with Torfaeus, we shall here mention the learned and eminent Arnar Magnus, the son of an obscure country priest in the western part of Iceland, and more con-

**TO**

**Maecenates** for his devotion to literary pursuits than Torfaeus. Raised from a humble and obscure situation by extraordinary efforts of talent and industry, he attained, in 1694, at the age of 31 years, the honourable situation of professor of philosophy in the university of Copenhagen; and a few years afterwards, he was invited with the offices of professor of northern antiquities and secretary of the royal archives. Luculent in his literary labours, he composed several important works, and collected at great expense a magnificent library, serving to illustrate the literature and antiquities of the North, and more especially the literature of his native island. The greater part of this library was unhappily consumed by the fire which happened at Copenhagen in 1728; and the unfortunate Magnus was witness to the almost total destruction of the fruits of many years' labour. He died two years after this disastrous event, and bequeathed to the library of the university the remnant of his literary treasures. His friend and favourite pupil, Finnur Jenfon, was another of the eminent Icelanders, who, during the last century, have contributed to preserve unimpaired the character and respectability of their country. Created bishop of Skalholt in 1754, he retained this office during the remainder of a long life, wholly devoted to the improvement and happiness of his fellow-citizens. In his admirable work, the "Ecclesiastical History of Iceland," written in elegant Latin, and published at Copenhagen in 2 vols. 4to., he has bequeathed to his countrymen a monument of extensive erudition, genuine piety, and warm patriotic feelings, which will continue as one of the most illustrious monuments of their literature. Mackenzie's Travels in Iceland.

**TORFE, in Geography, a town of Sweden, in West Gothland; 75 miles N.E. of Uddevalla.

**Torga**, a town of the principality of Georgia, in the province of Caket; 85 miles S.E. of Telia.

**Torgau, or Torgaw**, a town of Saxony, in the margrave of Meissen, on the Elbe. It was anciently the head place of a peculiar seigniory, which passed in fief from the electors of Saxony, of the Ascanian line. In the year 1530, the seventeen articles of the Protestant doctrine were presented at this place, to the elector John; and in 1576, the Torgau writing was made here, out of the Swabian Concordat and the Maulbun Formular; from which writing, the year following, the Formular Concordize was drawn up at Kloster Bergen. In the year 1745, the Prussians passed the Elbe here; in the year 1756, they fixed their military office at this place; and in the year 1757, they broke down the bridge thrown over the Elbe. In the year 1760, the Austrians, under marquis Daun, were defeated by the Prussians, commanded by the king in person. The Austrians lost 200 officers, and 7000 men prisoners. Marshal Daun himself was wounded. The Prussians had 2500 men killed, and 4000 wounded; 28 miles E.N.E. of Leipic. N. lat. 51° 32'. E. long. 13° 3'.

**Torgau, Convocation of. See Form of Concord.

**Torgesko, in Geography, a town of Russia, in the government of Irkutsk; 24 miles N.N.W. of Nertilchuk.

**Torgel, a small island in the North Sea, near the coast of Norway. N. lat. 65° 30'.

**Torgelow, a town of Anterior Pomorania, on the Ucker; 9 miles N. of Pafewalk.

**Torgoch, in Ichthyology. See Char.

**Torgots**, in Geography, a tribe of the Mongoles, who formed themselves into a different horde much later than the other Kalmuck branches. Removing at first from the region of the tablet Soongares, they marched westward till they came to the steppes on the Volga, where they finally settled, and
received from the Ruffians the name of the Volgaic Kalmucks. In 1616, this horde is said to have submitted to the Russian empire; and on crossing the Ural in 1662, their number amounted to 50,000 kibitkies. In 1661, the Russian government entered into this agreement with this opulent and powerful horde, which restricted the authority of the khan to narrower bounds, and excited such discontent, that they returned in the winter of 1670 and 1671, to the amount of between 55,000 and 60,000 kibitkies, over the ice of the river Ural, across the Kirghisian steppes, into the Soongary. The greater part of the Soongary took part in this migration; only some few bands of the Torgots remained behind; but the Tartars in subjection to the hordes refused to follow them. The Torgots were pursued by order of the Russian government; but most of them made their escape. Numbers indeed perished on their journey; many were taken prisoners by the Kirghises; and those who reached the place of their destination, put themselves under the protection of the Chinese government, which gave them a kind reception, but afterwards, for political reasons, treated them with great severity. The Torgots, with the Khoschotes and Soongary, who said behind or were brought back from their flight, are distributed among the Derbets; and wander, with their flocks and herds, in the steppes between the Don and Volga, from the line of Tseritzin as far as Caucasus, and between the Volga and the river Ural, from the Irgish quite to the Caspian: consequently in the governments of Saratof and Astrachan, and in the feats of the Cossacks of the Don. Tooke's Ruffia, vol. i.

TORGOWITZA, a town of Ruffian Poland, in the palatinate of Brandaw, 10 miles E. of Human.

TORGSAKER, a town of Sweden, in the province of Angermaandal; 25 miles N. of Hermoland.

TORGHOUT, a town of France, in the department of the Lys; 10 miles S. of Bruges.

TORIES, or Torys, a party or faction in England, opposite to the Whigs.

These two celebrated parties, which have so long divided our country, will make a considerable article in the English history, nothing inferior, in many respects, to that of the Grecis and Gibellines. The division has gone so deep, that it is professed, no Englisman, who has any concern or principles at all, but inclines more to one side than to the other; for which reason, we shall borrow our account of them from the mouths of foreigners, who may be supposed more impartial, and particularly from M. de Cize, a French officer, some time in the service of England, who has written the History of Whigism and Toryism, printed at Leipzic, anno 1717; and M. Rapin, whose Dissertation sur les Weighs & les Torys, printed at the Hague the same year, is well known; and reprinted at the close of the second volume of his History of England, fol. ed.

During the unhappy war which brought king Charles I. to the scaffold, the adherents of that king were first called Cavaliers, and those of the parliament Round-heads; these two names were afterwards changed into those of Tories and Whigs, on the following occasion.

A kind of robbers, or banditti, in Ireland, who kept on the mountains, or in the islands formed by the vast bogs of that country, being called Tories, a name they still bear indifferently with that of Rapparres; the king's enemies seeking him of favouring the rebellion in Ireland, which broke out about that time, gave his partizans the name of Tories; and on the other hand, the Tories, to be even with their enemies, who were closely leagued with the Scots, gave them the name of Whigs, who living in the fields and woods, fed much on milk; whence signifying white. But for a more probable etymology of Whig, see Writs.

The Cavaliers, or Tories, had, in the main, principally in view the political interests of the king, the crown, and the church of England; and the Round-heads, or Whigs, proposed chiefly the maintaining of the rights and interests of the people, and of Protestantism. Nor have the two factions yet lost their first views; though their first names, Cavaliers and Round-head, be now entirely diffused.

This is the most popular account: and yet it is certain that the name Whig and Tory were but little known till about the middle of the reign of Charles II. M. de Cize relates, that it was in the year 1678, that the whole nation was first divided into Whigs and Tories; and that on occasion of the famous deposition of Titus Oates, who accused the Catholics of having conspired against the king and the state,—the appellation Whig was given to such as believed the plot real; and Tory to those who held it fictitious.

When we compare, says Mr. Hume (E. I. I.), the factions of Whig and Tory with those of Round-head and Cavalier, which were merely parties of principle, the most obvious difference that appears between them, consists in the principles of "servile obedience," and "indestructible right," which were but little heard of among the Cavaliers, but became the Universal doctrine, and were esteemed the true characteristics of a Tory. If these principles were pushed into their most obvious consequences, they imply a formal renunciation of all our liberties, and an avowal of absolute monarchy: since nothing can be a greater absurdity than a limited power which must not be refined, even when it exceeds its limitations. But as the most rational principles are often but a weak counterpoise to passion; it is no wonder that these absurd principles were found too weak for that effect. The Tories, as men, were enemies to oppression; and also, as Englishmen, says Hume, they were enemies to arbitrary power. Their zeal for liberty was, perhaps (says this partial writer), less servile than that of their antagonists; but was sufficient to make them forget all their general principles, when they saw themselves openly threatened with a subversion of the ancient government. From these sentiments arose the Revolution; an event of mighty consequence, and the first foundation of British liberty. The conduct of the Tories, during that event, and after it, will afford us a true insight into the nature of that party. In the first place, they appear to have had the genuine sentiments of Britons in their affection for liberty, and in their determined resolution not to sacrifice it to any abstract principle whatever, or to any imaginary rights of princes. This part of their character must justly have been doubted of before the Revolution, from the obvious tendency of their avowed principles, and from their compliance with a court, which seemed to make little secret of its arbitrary designs. The Revolution shewed them to have been, in this respect, nothing but a genuine "court party," such as might be expected in a Britsh government: that is, "lovers of liberty, but greater lovers of monarchy." It must, however, be confessed, that they carried their monarchical principles further, even in practice, but more so in theory, than was in any degree consistent with a limited government. Secondly: Neither their principles nor affections concurred, entirely or basically, with the settlement made at the Revolution, or with that which has since taken place. This part of their character may seem opposite to the former; since any other settlement in those circumstances of the nation, must probably have been dangerous, if not fatal, to liberty. But the
heart of man, says our author, is made to reconcile contradictions; and this contradiction is not greater than that between "passive obedience," and the renunciation employed at the Revolution. A Tory, therefore, since the Revolution, may be defined in a few words to be "a lover of monarchy, though without abandoning liberty; and a partizan of the family of Stuart," as a Whig may be defined to be "a lover of liberty, though without renouncing monarchy; and a friend to the settlement in the Protestant line."

Some, who will not venture to assert, that the real difference between Whig and Tory was lost at the Revolution, seem inclined to think, that the difference is now abolished, and that affairs are so far returned to their natural state, that there are at present no other parties among us but Court and Country; that is, men who, by interest or principle, are attached either to monarchy or liberty. The Tories have been so long obliged to talk in the republican style, that they seem to have made converts of themselves by their hypocrisy, and to have embraced the sentiments, as well as language of their adversaries. There are, however, very considerable remains of that party in England, with all their old prejudices.

The precise difference, says an anonymous writer (Edinb. Rev. No. 1.), between a moderate Tory and a moderate Whig is, "that a Tory is more influenced by loyalty, and a Whig by the love of liberty; that a Tory considers liberty as the second interest of society, while a Whig regards it as the first." Loyalty is denominated by Mr. Hume "that noble and generous principle, inferior only in excellence to the more enlightened affection towards a legal constitution."

We should here confine ourselves to the Tories; and for what regards the Whigs, refer to that article; but since, by comparing and confronting the two parties together, both the one and the other will appear in the stronger light, it would be imprudent to separate them; so that we rather choose to say the less under the word Whigs, and refer thence higher.

The factions we are speaking of, may be considered either with regard to the state, or to religion. The state Tories are either violent or moderate: the first would have the sovereign to be absolute in England, as in other countries, and his will to be a law. This party, which is not very numerous, has yet been considerable. 1. On account of its leaders, who have been lords of the first rank, and generally ministers and favourites. 2. In that, being thus in the ministry, it engaged the church Tories to maintain stiffly the doctrine of passive obedience. 3. Because they have been frequently supported by the crown.

The moderate Tories would not suffer the king to lose any of his prerogatives; but neither would they sacrifice those of the people.

The state Whigs, again, are republican or moderate: the first, according to our author, are the remains of the Long parliament, who took in hand to change the monarchy into a commonwealth: these make for fender a figure, that they only serve to strengthen the party of the other Whigs. The Tories would persuade the world, that all the Whigs are of this kind; as the Whigs would make us believe, that all the Tories are violent.

The moderate state Whigs are much in the same sentiments as the moderate Tories; and desire the government may be maintained on its ancient foundation, and that the king may be reduced to an incapacity of abusing his power, by leaving him the possession of his just rights; all the difference is, that the moderate Tories lean a little more to the side of the king, and the moderate Whigs to that of the parliament and people.

Before we consider our two parties with regard to religion, it must be observed, that the Reformation, as carried on to a greater or less length, divided the English into Episcopalian and Presbyterian or Puritans: the first contend, that the episcopal jurisdiction should be continued on the same footing, and the church in the same form, as before the Reformation: the latter maintained, that all ministers or priests had equal authority; and that the church ought to be governed by presbytery, or consistory of priests and lay-elders. See Puritans.

After long disputes, the more moderate of each party relaxed a little of their stiffness; and thus formed two branches of moderate Whigs, and moderate Tories, with regard to religion; but there were others who kept to their principles with incalculable firmness; and these constituted two branches of rigid Episcopalians and Presbyterians, comprised under the general names of Whigs and Tories; in regard, the first join the Tories, and the latter the Whigs.

The former consisted of rigid churchmen, who were against the least change in the discipline of the church, while the more moderate among the ecclesiastical Tories were less scrupulous and obstinate, and may be called the low or moderate churchmen. See High Church and Non-Jurors.

The latter were the rigid Presbyterians, who would be contented with nothing less than the destruction of the hierarchy, while the more moderate among them would have been satisfied with much less, and put up, says Mr. Rapin, with a bare toleration.

From what has been observed, we may conclude, that as the names Tory and Whig have a regard to two different objects, they are equivocal, and of consequence ought never to be applied without expressing in which sense it is done; for the same person may be, in different respects, both Whig and Tory.

For the rest, the general motives that have formed and kept up the two parties, appear in the main to be no other than the private motives of particular persons: self-interest is the primum mobile of their actions; ever since the rise of these factions, each has struggled earnestly to get the advantage over the other; inasmuch as from such superiority accrue places, and honours, and promotions, &c. which the prevailing party usually distributes among its own members, exclusive of the contrary party.

There are, however, men belonging to each of these parties, though the distinction is almost worn out, who act from conviction; some of whom are for the extension, and others for the limitation of royal prerogative, with a view to the good of the state, as their principles lead them to form different notions of the most effectual method of promoting it. The names, it is true, are almost sunk into oblivion; but the operation of the distinguishing sentiments of Whigs and Tories is discoverable in every period of the English history; and the true interest of a limited monarchy, always inextricably connected with the rights of the people, renders the distinction of importance, and should prevent its ever being disregarded.

It is with the Whigs and Tories on those points, which have discriminated the two parties, says Dr. Gregory Sharpe, as it is with all other sects of men under the agitation of hope and fear, ambition and interest; they tighten or relax their principles as suits their convenience. When the Tories have had the exercise of the powers of the prerogative, they have been eager to extend those powers;
when the edge has been turned against them, they have been as eager in the defence of popular liberty; and in like manner the Whigs, who withstood the storm, have melted in the fun-flower, so that in point of court complaisance, the administrations of the one have differed very little from those of the other. Holberg's Int. to Universal History, by Sharpe, p. 262.

As to the characters commonly attributed to the Whigs and Tories; the Tories, says N. Rapin, appear fierce and haughty: they treat the Whigs with the greatest contempt, and even sometimes with rigour, when they have the advantage over them: they are very hot and vehement, and proceed with a rapidity, which yet is not always the effect of heat and transport, but has its foundation sometimes in good policy: they are very subject to change their principles, as their party prevails or is humbled.

If the rigid Presbyterians prevailed in the Whig party, it would not be less hot and zealous than that of the Tories; but it is said they have not the direction thereof; which gives room to affirm, that those at the head of the Whig party are much more moderate than the chiefs of the Tories; add, that they usually conduct themselves on fixed principles, proceed to their end gradually, and without violence; and their slowness is not less founded on good policy, than the haste and precipitation of the Tories.

Thus much says our author may be said to the advantage of the moderate Whigs, that, in the general, they maintain a good cause, viz. the constitution of the government as by law established.

TORIEDALE, Head, in Geography, a cape on the N. coast of Scotland. N. lat. 58° 30'. W. long. 4° 10'.

TORILIS, in Botany, a genus of Adanson's, whose name perhaps may have been fabricated from τορίλις, to carpe or embois, in allusion to the seeds, which, however, answer not to this idea than those of many neighbouring genera. —A d. Fam. v. 2. 99. Spreng. Prod. Umbellif. 24. Gært. t. 20. —Clas and order, Pentandria Digynia. Nat. Ord. Umbellifera.

Adanson distinguishes this genus from Caucalis, (see that article,) by the want of a general involucre, and the flerones of the leaves which compose the partial ones. These are principles of Artedi and Linnaeus, but not generally reckoned among their bulbs. Gærtner, and more recently Sprengel, distinguish Torilis by the bristles of the fruit being scattered equally on its whole surface; not, as in Caucalis, ranged along its ribs. As one of the species, Anthericus, usually, if not constantly, is furnished with a general involucre, and another, nodosa, is not always destitute of one; and as the inflorescence of the bristles is a very obscure, if not precarious, character; which appears by the disagreement between Gærtner and Sprengel, concerning the species supposed to compose this genus, we prefer leaving our three British ones at least in Caucalis, where they are placed in the Flora Britannica.

TORIM, in Geography, a town of New Mexico, in the province of Hiaqui; 55 miles S.W. of Riochico.

TORIN Rocks, a cluster of rocks near the S.W. coast of the island of Mull. N. lat. 56° 16'. W. long. 6° 28'.

TORISA, a river of European Turkey, which runs into the Mariza, at Adrianople.

TORKESLEY, John, in Biography, author of one of the most important tracts in the MS. of Waltham Holy Cross, at present in the possession of the marquis of Lansdowne. This tract, which is the fifth in the collection, has been already described. See Power, Lionel.

TORLA, in Geography, a town of Spain, in Aragon; 16 miles E. of Jaca.

TORM, Eric Olausii, in Biography, a Danish writer, was born in 1607, and educated in the school of Viborg. Having finished his education, and spent several years in the capacity of private tutor, he set out on his travels in a view to further improvement; and visited Oxford, Leyden, and Paris; and in 1736 he was appointed professor of mathematics in the University of Copenhagen, and afterwards librarian and preacher in one of the churches. He died in 1697. He was the author of many works, chiefly mathematical and historical. Gen. Biog.

TORME, in Geography, a town of Spain, in Old Castile; 15 miles N. of Prias.

TORMENTILLA, in Botany, a diminutive of tormentum, a pain or gripping, supposed to have been chosen to designate this little astringent plant, because it served to alleviate pains of the teeth, or of the bowels, tornina. But it may simply perhaps apply to that astringency, which, considering the primary sense of the above words, the name seems to indicate. —Linn. Gen. Pl. 256. Wild. Sp. Pl. v. 1. 112. Mart. Mill. Diat. v. 4. Sm. Fl. Brit. 552. Jull. 337. Tourn. t. 153. Lamarck Illustr. t. 444. Clas and order, Iosandria Polygyna. Nat. Ord. Senticole, Nat. Raflesi, Jaff.

Gen. Ch. Cal. Periander inferior, of one leaf, flat, cut half way down into eight segments, of which four alternate ones are smaller and more acute. Cor. Petals four, inwardly heart-shaped, flat, spreading, their claws inserted into the calyx. Stem. Filaments fifteen, awl-shaped, half the length of the petals, inserted into the calyx; anthers roundish, simple. Pila. Germs eight, small, collected into a little round head; styles thread-shaped, the length of the flaments, inserted laterally into the gérms; stigma obtuse. Peric. none. Sepals of the seeds, dry, corrugated, bluntly pointed.

Eff. Ch. Calyx inferior, in eight segments. Petals four. Seeds roundish, naked, wrinkled, attached to a small dry receptacle.

Obst. Linnaeus remarks, that this genus differs from Potentilla, (see that article,) in characters founded on number only, and therefore they might be united. Schreber, and recently Dr. Neftler of Strafsburg, have adopted this measure, the latter uniting Comarum allo to Potentilla. As the numerical differences are extended throughout the parts of fructification, though some of them are acknowledgment to vary, and the two species of Tormentilla accord so well in habit, we are induced to follow Linnaeus, Tournefort, and Jussieu, in retaining the genus; for if number were in this case entirely overlooked, we do not perceive how Sibaldia could be supported. (See that article, Comarum, and Rosaceae.) It has been ascertained, that botanists who retain such genera as this, viz. Ray, Tournefort, Linnaeus, and Jussieu, will not gain much fame with posterity; but of this, we humbly presume, posterity will be the judge.

wiry, often procumbent. Leaves ternate, lanceolate, rather hairy, deeply serrated, with a pair of deep cut stipulas. Flowers bright yellow, on long, simple, solitary, lateral flanks. The late Miss Johnes of Hafod found one plant in that romantic spot, whose flowers were double, a rare instance.

2. T. repens. Trailing Tormentil. Linn. Sp. Pl. 716. Wild. n. 2. Fl. Brit. n. 2. Engl. Bot. t. 864. (Pentaphyllum repens alatum, folis profundius ferratis; Plot. Oxford. t. 9. f. 5.)—Stems profuse. Leaves falcate.—Native of banks and shady places, in England and Germany, but not common. We once gathered it in a lane at Brighouse, near Halifax, Yorkshire, in the middle of summer. The root, though perennial, is much smaller and flenser than in the foregoing. Stems few, eighteen or twenty inches long, often simple, entirely profuse, but not creeping. Whole herb finely hairy, of a light green. Radical leaves on long flanks, of five, obovate, deeply serrated leaflets; those on the stem of three only, on shorter flanks; the floral ones falcate, narrow, and often entire. Stipulas united to the base of the footflanks. Flowers twice as large as the foregoing, on very long flanks, opposite to the leaves.

Tormentilla, in the Materia Medica. The root of the common tormentil, or upright seep-toil, tormentilla erecta, is the only part that is used in medicine. It is knotty, externally blackish, and internally reddish. It has a strong styptic tincture, but imparts no peculiar vivid flavour. As a proof of its powerful astringency, it has been sublimated for oak-bark in the tanning of skins for leather. Its active matter is therefore chiefly tannin; the infusion in boiling water being copiously precipitated by solution of sulphate of iron, and striking a deep black with sulphate of iron. This root has been long held in high estimation by physicians, as a very useful astringent; and having little retn, it becomes peculiarly adapted to cases where the heating and stimulating medicines of this class are less proper, as phthisical diarrhoas, diarrrhoea cruenta, &c. Dr. Cullen thinks it has been justly commended for every virtue that is competent to astringents; and he adds, that he has found it, both by itself and as joined with gentian, cure intermittent fevers, when given in substance and in large quantities. It gives out its astringency both to water and rectified spirit, but most perfectly to the latter: the extract, particularly the spirituous, obtained by infusion, are intensely styptic. The root is generally given in powder, from half a drachm to one or more for a dose; but it is more generally given in decoction; an ounce and a half of the powdered root may be boiled in three pints of water to a quart, adding, toward the end of the boiling, a drachm of cinnamon; of the strained liquor, sweetened with an ounce of any agreeable syrup, two ounces or more may be taken four or five times a day. As a local remedy, it may be used with advantage in the form of gargles and lotion in ulcerations of the tongue and mouth, against spongy gums, and as an application to festid ill-conditioned ears; but it is seldom used. Lewis. Woodville.

Tormenting, in Agriculture, a term signifying in tillage cultivation an imperfect sort of horse-hoeing or ploughing, or what is sometimes, in some districts, termed sub-hoeing or sub-ploughing. It is occasionally too used as a term of reproach for bad tillage of any kind.

Tormentor, an implement of the tillage kind, used for breaking down and reducing the parts of stit tills. It is a powerful tool of this fort which is much employed in Devonshire, Cornwall, and some other counties; in the first of which for the purpose of cross-cutting the balks of whole ground, left after the velling and skirring operations for beat-burning, or paring and burning the surface-turf. It is indeed useful in working lands in almost all cases of bringing them into cultivation, and into a fine state of mould. See Skirting, Tillage, and Velling.

This fort of implement is constructed in different modes and forms, as in a kind of long triangular shape, the beam part being lengthened out before, in which is fastened, by a fork of shanks, a small wheel, which is capable of being raised or let down at pleasure, so as to regulate the depth of working of the tool. At or near the extremity of the frame behind are fixed two large wheels, to allow the triangular pointed shares or hoes to work in the ground. The whole is strongly framed together in three pieces; the middle or beam, and the two outside pieces. The number of shares or hoes is usually about nine. The fame tool is sometimes contrived with two wheels in the front, and with a crane neck, being the fame in all other respects.

The spil of iron which passes through the beam in the front, and supports the fore-wheel, has a number of iron rings on it, by which the depth of flaring is regulated. The length of the beam is six feet nine inches. The breadth or width of the back-piece, where the large wheels are placed, is three feet seven inches. The large wheels are three feet in diameter. The small fore-wheel is ten inches in diameter. The side-pieces of wood of which the frame is made, are four inches square, and the beam thereabouts. The shares or hoes, which are fixed upon shanks, with smaller parts to pass through the frame parts and be fastened above, are fifteen inches in length.

The construction of the tool is consequently very simple, and easily accomplished by any common workman, so that the farmer need never be at a loss for so powerful and effective an implement in the cultivation of tillage land.

Tormes, in Geography, a river of Spain, which rises in Old Calchile, and crossing the province of Leon, passes by Alva de Tormes, Salamanca, &c. and enters the Duero a few leagues below Miranda de Duero.

Tornina, in Medicine, a term sometimes used to express pains in the general; but more particularly a species of pain, called tornina ventris, or aevi; in English, the gripe; which see. See also Distention.

Young children are very often troubled with gripes; it is upon this account that nurses, in order to prevent or remedy them, usually mix with their spoon-meats a little brandy, or some carminative feeds, as caraway-seeds, &c.

Some children breed their teeth with violent gripes, which are apt to bring on convulsions of the bowels.

In adults, the dry gripes are usually cured by the exhibition of warm cathartics, such as tincture of hiera pica, elixir faltus, tincture of rubarb, &c. with the addition of opiates.

Tormis, Tornes, in Ancient Geography, a river of Hispания, in Lusitania, which united with the Durius. See Tornes.

Tornia, in Geography, a town of Hungary, and capital of a county; 14 miles S.W. of Cacchan.—Also, a town of Saxony; 3 miles S. of Pirna.

Tornado, or Turnado, a sudden and violent gale of wind rising suddenly from the shore, and afterwards veering round all points of the compass like a hurricane; very frequent on the coast of Guinea. These winds frequently shift suddenly from one quarter of the horizon to another, and then come again to the former point. Before a tornado comes, it calms the const ant easterly winds; and when they are past, the easterly wind gathers force again, and the weather clears up fair. See Hurricane and Whirlwind.
ANCIENT Lucca, Divine Dupin. River was 18 He 1757, parallel Chalcidia. 60 of the 16 valuable 1543, cape 3 yet river 1566. Ancient performed enlarged in 50 the 8 Geography, E. name. 13 N. Biorkhon, But small island from 1600 augmented it, being on the scene in 1566. Ancient Birkin, named its mouth, near the Gulf of Bothnia, and said to be the oldest town in the country, and the farthest towards the north. It has three streets, running in parallel lines from north to south, which are intersected at right angles by fourteen cross-streets or lanes. Torina, though built on an uniform plan, consists mostly of detached cottages, and contains only 600 inhabitants. The streets are very broad, and not being paved, are overgrown with grass, on which the cows regularly pasture. The inhabitants, being a mixture of Finns and Swedes, have the character of being idle, and addicted to drunkenness; yet the adjacent country, chiefly by the industry of the Finnish settlers, is rapidly improving; and the population of the province of Lapland appears to have advanced much faster than that of any other part of Europe. In the year 1750, this, according to baron Hermelin, was 27,000; in 1777, it had increased to 31,000; but in 1801, it amounted to 52,000. The church is built with timber, and stands at a little distance from the other buildings, but within the palisades which inclose the town, and a pretty large piece of arable land. Divine service is performed here in the Swedish language, which is used by the burghers. There is another church, built with stone, on an island called Biorkhon, which lies near the town, in which the service is performed in the Finnish language, for the benefit of the burgher servants, and the inhabitants of the adjacent country. A very considerable trade is carried on here, not only by the Swedes and Laplanders, but the Russians and Norwegians, who also resort to the trading and bartering places of Torina, in order to traffic. In the year 1694, this town was honoured with the presence of king Charles XI, who, being accompanied by several persons of distinction and learning, took a view of the place, at midnight, if it may be called so, from the church tower, at Torina. In this town, and the adjacent country from hence to Kites, observations were made in 1736 by M. Maupertuis, and some other members of the Academy of Sciences at Paris, in order to determine the measure of a degree of, and consequently the figure of the earth, and its ratification and extension by Ivanborg in 1799. N. lat. 65° 48'. E. long. 24° 2'.

Torina Ofvar, a town of Sweden, in West Bothnia. 3 miles N. of Torina. Torina of Var, a town of Sweden, in West Bothnia. 3 miles N. of Torina. Torina Ophav, a town of Sweden, in West Bothnia. 3 miles N. of Torina. Torina Nere, a cape on the coast of the Morea. 3 miles S.S.E. of Chirensa.

Torina Sol. See Torina Sol.

Torina Ness, a cape on the south coast of the island of Stroma. N. lat. 58° 56'. W. long. 2° 29'. Torinelli, Agostino, in Biography, a learned ecclesiastic, was born at Novara in 1543, and having entered into the society of Barnabites, he became general of this society. He undertook to write an ecclesiastical history from the beginning of the world to the time of Christ, in the form of annals, and executed the work with very laudable lauga-

city and correctness, furnishing the reader by his chronological and geographical observations, with a valuable commentary on the books of the Old Testament. It was first printed at Milan in 1610, and afterwards frequently reprinted. Father Negri published an enlarged edition, with valuable notes, in 1577, at Lucca, in four vol. folio. He declined the offer of the bishopric of Mantua, and chose to remain in the Barnabite college at Milan, where he died in 1622. Dupin.

Torino, in Geography, a town of Germany; in the principality of Anhalt Zerbst; 3 miles W. of Zerbst.

Torino, a town of Italy; 18 miles S. of Venice.

Torino, an island in the Baltic, near the coast of Sweden. N. lat. 58° 49'. E. long. 15° 40'.—Alfo, a town of Naples, in the county of Molise; 15 miles S.E. of Molise.—

Alfo, a town of Spain, in the province of Leon, situated on the summit of a hill above the Duero, over which is a bridge of twenty-two arches. It is the seat of a bishop, and one of the most ancient in the kingdom. Here are the remains of an ancient Moorish castle, forming a square of 143 feet, with a round tower at each angle. In the year 1476, a battle was fought here, by which Ferdinand, prince of Aragon, obtained the kingdom of Castile from Alphonso, king of Portugal; 17 miles E. of Zamora. N. lat. 41° 45'. W. long. 5° 37'.—Alfo, a town of New Mexico, in the province of Chalona; 50 miles N. of Chalona.

Tono, 11, a small island in the Mediterranean, near the south coast of Sardinia. N. lat. 39°. E. long. 8° 34'.

Toronca, in Ancient Geography, a town in the interior of European Sarmatia, near the river Careontes. Post.

Torolla, in Geography, a town of Spain, in Aragon; 18 miles N.W. of Jaca.

Torom, a river of Russia, which runs into the Oby; 24 miles E. of Surget.

Toron, a town of European Turkey, in Macedonia, situated on a neck of land which projects into the Archipelago, between the gulf of Monte Santo and the gulf of Cassandra; 60 miles S.E. of Salomiki. N. lat. 40°. E. long. 24° 54'.

Toron, or Toronaicus Sinus, in Ancient Geography, a gulf of the Ægean sea, on the coast of Macedonia, and separated from the Sgotic and Thermaen guls by two large peninsulas. Tacitus. Planys calls this gulf Mcybernus.

Torone, a town of Macedonia, upon the Toronic gulf, to which this gulf owes its name. Ptolemy places it in the Paraxis, and Theudicides fixes it in Chaledia. About three stadia from this town was a temple of Castor and Pollux.—Alfo, a town of Epirus.

Toronto, in Geography, a settlement of Canada, on the N.W. bank of lake Ontario, now called York. See York.

Toronto, a town of Peru; 60 miles S. of Potoxi.

Toronto, a town of Russia, in the government of Pskov; 156 miles S.E. of Pskov. N. lat. 56° 25'. E. long. 32° 24'.

Toronto, a town on the island of Mull. N. lat. 56° 35'. W. long. 6° 5'.

Toronto, a town of Transylvania, in the environs of which are mines of iron and silver; 19 miles N. of Weiffenburg.

Toorus, in Botany, is sometimes used to express an inequality of surface, like the brawny swellings of a molecular limb; as in the capsule of Papaver hybridum.

Torp, in Geography, a town of Sweden, in West Goth-
The torpedo, or Gram-Fish, or Electric Ray, is a sea-fish, famed, both among the ancient and modern naturalists, for a remarkable numbness with which it strikes the arm of such as touch it. See Raja Torpedo.

This species is found in the Mediterranean, on the Atlantic coast of France, and in the English seas, particularly at Torbay, near Waterford, on the coast of Ireland, and in other places. See Anfon's Voyage, p. 266.

It is generally taken with the trawl, but an instance occurs of its taking a bait, which vindicates a fine account which Oppian has left us of this fish. It commonly lies in water about the depth of forty fathoms, in company with the congenerous rays; but its more frequent and favourite situation is the sand, in which it will bury itself by flapping its extremities, and throwing the sand in a light shower over its back. In this situation the torpedo gives its most forcible shock, which throws down the astonished passenger who inadvertently treads upon him. The food of the torpedo is fish, and they probably flupsey their prey by the shock they give them; and yet the sea-leech and common sea-crab will venture to annoy them.

This fish is so far amphibious as to live in air twenty-four hours, and but little longer in fresh water. The best method of preserving them is in well-boats kept in salt water, and not put into much motion.

Road-leas speaks unfavourably of the torpedo as food, and tells us, that at Vepric the prefect of health forbids it to be sold in the market; but in deeming it wholesome food, we have the sanction of Hippocrates and Galen, and it is sold in the markets of France. The electrical organs, indeed, which make one half of the animal, though wholesome, are an impudic mucilage; but its muscular part is, at least, as palatable as the flesh of the other rays: among these, the old and overgrown are always in little request.

The torpedo brings forth its young at the autumnal equinox, as affirmed by Arifotle, though questioned by Lorenzini. In one deposited at La Rochelle, on the 8th of September, were found in the matrices several of the facts quite formed, and nine eggs in no state of forerunners: superfection seems to be, therefore, a property of this fish; the eggs seemed to be defined for the spring brood, as they produce about the vernal as well as the autumnal equinox. There may be also another production at midsummer, but it principally takes place at the two equinoxes.

Upon touching this fish with the fingers, it frequently, though not always, happens, that the person feels an unusual painful numbness, which suddenly seizes the arm up to the elbow, and sometimes to the very shoulder and head.

The pain is of a very particular species, and is not to be described by any words; yet MM. Lorenzini, Borelli, Redi, and Reaumur, who all felt it severely, observe it to bear some resemblance to that painful sensation felt in the arm, upon striking the elbow violently against a hard body: though M. Reaumur affixes us, this gives but a very faint idea of it.

Its chief force is at the instant it begins; it lasts but a few moments, and then vanishes entirely. If a man do not actually touch the torpedo, how near soever he holds his hand, he feels nothing; if he touch it with a flick, he feels a faint effect; if he touch it through the interposition of any pretty thin body, the numbness is felt very considerably; if the hand be pressed very strongly against it, the numbness is the less, but still strong enough to oblige a man speedily to let go.

Oppian affirms, that it will bend the astonished fisherman, even through the whole length of line and rod. See the passage cited and translated by Pennant, Brit. Zool. vol. iii. p. 39.

But great as are the powers of this fish when in vigour, they are impaired as it declines in strength, and totally ceases when it expires. The shocks in water are apprehended to be near a fourth of the force of those at the surface of the water, and not much more than a fourth of those entirely in air. This strange power, with which the torpedo is endowed, and which we shall presently explain, seems to have a double use: the one, when it is exercised as a means of defence against voracious fish, who are by a touch deprived of all power of seizing their prey; the other is well explained by Pliny, who tells us, that by the same powers it attains its end with respect to those fish which it wishes to enframe; for concealing itself in the mud, and bending the fish that are carelessly swimming about, it makes a ready prey of them.

M. Reaumur, having no fishes alive to examine what the torpedo would do to them, shut up a drake in water with it, and after some time it was taken out dead. See Electric Organs of Fishes.

We shall now proceed to give a brief recital of the different theories that have been adopted in order to account for the extraordinary effects of the torpedo. This fish was early known to the Greeks; it is mentioned, as an efeulent fish, by Hippocrates, under the name σπαργα, which flowed that the ancients had some knowledge of its torporic qualities. Plato also was acquainted with them, as appears by the humorous comparison of Socrates to that animal, which he puts into the mouth of Menon. Aristotle likewise treats of the benumbing or stupefying qualities of this fish, though he seems to have no idea of their being communicated by the intervention of a flick, rope, or water.

Theophrastus, according to Athenæus, observed that the torpedo conveyed the benumbing sensation through flicks and spears into the hands of the fishermen that held them. Diphilus, of Laodicea, takes notice that the torpor was occasioned, not by the whole, but by certain parts of the body of this fish; and Hero of Alexandria mentions it as emitting effluvia through brays and iron, and other solid bodies.

Pliny's account, though partly true, is mingled with the marvellous and false. Plutarch is more full and just; for he represents the torpedo as not only benumbing all that touch it, but striking a numbness through the net into the hands of the fishermen, and as even diminishing the feeling of those who poured water upon it, if it happened to be laid on the ground alive. He adds, that whilst the torpedo swims round his prey, he emits certain effluvia like darts, that first affect the water, and then the fishes in it, which are thus disabled from defending themselves or escaping.

Before the days of Galen the torpedo was placed alive to parts affected, and particularly for the cure of an obtirate ache, as appears from Scribonius Largus, who lived under Claudian, and from Dioscorides, who flourished soon after. Galen conceived that the torpedo acted by a frigoricid principle, for as cold occasion a numbness in an animated body, so does the shock given by that animal. Paulus of Egina, one of the Galenic school, recommends the oil of the dead fish for tempering the hot humour of the gout, and for other ailments that required cooling applications.

Such are the unsatisfactory accounts of the philosophers and physicians of antiquity.

The Abyssinians, it is said, use torpedos for the cure of fevers,
fevers, by tying down the patient to a table, and applying the fish successively upon all his members, which puts him to cruel torment, but effectually removes his disease. Bel- 
lonius affurces us, that our own torpedoes applied to the soles of the feet, have proved successful against fevers.

Oppian, like Diphilus, distinguishes the parts where the powers of the fish peculiarly reside; these he calls ʃʃʃʃʃ, the flanks, from which he imagined the animal had a faculty of darting upon other fishes certain substanctes, called by a name ʃʃʃʃʃ, the meaning of which is obscure. In the six- 
teenth century, some members of the Academia del Ci- 
mento availed themselves of their vicinity to the sea to make experiments on the torpedo. Redi began, and was after- 
wards affitled by Borelli, and Steno the Dane; and Lo- 
renzini, his scholar, engaged in the same pursuit, and pub- 
lished a curious treatise upon the subject. Redi, having 
endeavoured to distinguish between the real properties of the torpedo, and those erroneously ascribed to it, proceeded to the anatomy of it; and was the first who with any ac- 
curacy described those crooked substanctes lying on each side of the spine, near the head, which he considered as 
muscles (from thence named ʃʃʃʃʃ) that projected, 

according to him, certain effluvia, occasioning the fen- 
fation of numbnes more or less, as the animal was excited to put 
these organs into action. This hypothesis of the transmis- 
tion of effluvia was immediately embraced by Lorenzini, 
and afterwards by Claude Perrault. Borelli, not admitting 
the emission of benumbing particles, referred the fen- 
fation produced by this fish to a certain brill undulation of the 
parts touched, which the animal could excite at will.

In 1714, M. Reaumur, being on the coast of Poitou, 
took an opportunity of making some experiments on the 
torpedo, which, with the result, he communicated to the 
Royal Academy of Sciences at Paris. His hypothesis, 
which was generally received by the ingenious naturalists 
over all Europe, is not very different from that of Borelli; 
for instead of the undefined vibrating parts of the latter, 
M. Reaumur substituted muscles (the ʃʃʃʃʃ of Redi and Lorenzini) which, by the 


vividness of their action, 

impressed upon the hand, that touched these parts, a sen- 
fation of numbnes, owing to the foppage of the progression 
of the nervous fluid, or a repulsion of the same. But he 
denied that this impression of numbnes could be commu- 
nicated through water, a net, or any other soft and yielding 
substance; nay, through a stick, except a very short one; 
whereas, it is certain, that the shocks of the torpedo are 
not less conducted through such media than those from a 
charged electrical phial.

We have been lately furnished, by the experiments and 
observations of John Walsh, esq. with a theory, much more 
plausible and just than any above recited, which considers 
the electric fluid as the efficient cause of the amazing qua- 
lities of the torpedo. We shall be led to a brief account of 
the facts on which this theory is founded by the follow- 
ing preliminary remarks.

Soon after the discovery of the Leyden phial, the cele- 
brated professor Allemand applied to M. s'Gravefande, go- 
vornor of Exequibo, for an account of a fish in Surinam, 
resembling a conger-eel, and possessing properties similar to 
those of the torpedo; this account was received in 1754, 
and published in the second volume of the Transaotions of 
the society at Haerlem. From this account it appears, 
that the shocks of the fish, which were so violent, when the 
fish was strong and lively, as to throw a person who touched 
it to the ground, were like those of the electrical fire, but 
unaccompanied with sparks of fire; and that the fish was a 
species of the gymnotus of Artedi. In the sixth volume of 
the same work, we have a more ample relation of the exer- 
cises of this animal by M. Vander Lott, dated from Rio 
Exequibo, in 1761. M. Adanson, about the same time 
with the discovery of M. s'Gravefande in America, met 
with the same or a similar fish in the river of Senegal in 
Africa. The earliest account we have of this kind of eel 
is by M. Richer, recorded by M. du Hamel, in his History 
of the Royal Academy of Sciences for 1777. In the if- 
land of Cayenne, says M. du Hamel, there is a fish, not 
unlike a conger-eel, which, touched with the finger, or even 
with the end of a ftick, affects the arm with a numbnes, 
and the head with giddines, and the eyes with a dimness of 
sight, which M. Richer had himself felt upon making the 
experiment. See Gymnotus.

We are indebted to Mr. Walsh for not only the first, but 
for a numerous series of experiments on the torpedo, in order 
to ascertain its electrical nature; together with some correct 
and elegant drawings of the entire animal, and of some of its 
principal organs that appeared upon dissection. These ex- 
periments were made in the year 1772, partly at the ifle of Rhé, 
and partly at Rochelle, in the presence of the members of 
the Royal Academy of Sciences at that place. They were 
conducted in a scientific manner, and properly diversified, 
and the result of them satisfactorily established the torpedo 
in the rank of an electrician, furnished with a power over 
the electric matter; by means of which he can, without 
any foreign machinery, and almost in an instantaneous man- 
ner, collect, condense, and at his will dispence it to neigh- 
bouring bodies, through any of those substanctes that are 
known to be conductors of the electric fluid. The fen- 
fations occasioned by the torpedo and Leyden phial, in the 
human frame, are precisely similar: not only the shock, 
but the numbing senfation sometimes given by the ani- 
mal, may be exactly imitated with the phial, by means of 
Lane's electrometer; the regulating rod of which, to pro- 
duce the latter effect, must be brought almost into con- 
 tact with the prime conductor which joins the phial. The 
first experiment of Mr. Walsh discovered the elec- 
trical quality of the torpedo, by his conveying its effects 
through the same conductors with his electricity, such as 
metals, water, and animal fluids, and by intercepting it 
by the same non-conductors, as glass and sealing-wax. Be- 
sides, one of the most brilliant of his discoveries was, that 
this animal not only could accumulate in one part a large 
quantity of electrical matter, but was furnished with a cer- 
tain organization, disposed in the manner of the Leyden 
phial: thus, while one surface of the electrical part (e.g. 
that on the back) was charged with this matter, in a posi- 
tive state; the other surface (that on the belly) was de- 
prived of it, or in a negative state: so that the equilibrium 
could be restored, by making a communication between 
the two surfaces by water, the fluids of the human body or 
metals, in the same manner as by forming a circuit between 
the inside and outside surfaces of the Leyden phial. A 
living torpedo was laid on a table, upon a wet napkin; 
round another table stood five persons insulated: and two 
brafs wires, each thirteen feet long, were suspended from 
the ceiling by silkens rings. One of the wires rested by 
each end upon the wet napkin, the other end was immered 
in a basin full of water, placed on a second table, on which 
stood four other bacons full of water. The first per- 
son put a finger of one hand into the water in which the 
wire was immered, and a finger of the other hand into the 
second; and so on successively, till all the five persons com- 
municated with one another by the water in the bacons. In 
de the
the last but one end of the second wire was dipped, and with the other end Mr. Walsh touched the back of the torpedo, when the five persons felt a shock, differing in nothing from that of the Leyden experiment, except in being weaker. Mr. Walsh, who was not in the circuit, was not affected. This experiment was successfully repeated several times, even with eight persons. From this experiment it is evident, that the action of the torpedo is communicated through metals and water, or, in general, through the same media that transmit the electrical concussion. It follows, likewise, that the upper and under parts of the animal, like the upper and under surfaces of an electrified plate of glass, are in different states; for a person who touches only the upper or the under surface of the electric organs, will not receive the shock of the torpedo. This action evidently depends on the will of the animal, who, however, scarcely exhibits any other sensible motion or effort at the time of exerting it than a depression or winking of his eyes. The same motion is observed likewise to accompany its fruitless attempts to transmit a shock through non-conductors. The flock of elecrical matter which the torpedo polishes appears to be very considerable: a torpedo, when inflated, has given to Mr. Walsh, insulated likewise, no less than fifty shocks in the space of a minute and a half.

Such are the operations performed by the torpedo in air. When a large fish, very liberal of his shocks, was held in water, with one hand on his breast and another on his back, he gave the operator shocks of the same kind as before, but about one-fourth of the strength of those given in air. At the very instant of raising him out of the water, he constantly gave a very violent shock, and another nearly as violent, when his lower surface first touched the water on dipping him into it. On briskly and alternately plunging him a foot deeper into water, and raising him an equal height into air, besides one or two shocks which he gave during the short time he was wholly in the water, and those which he gave at the surface, he constantly gave at least two when he was wholly in the air: so that Mr. Walsh estimates that he gave above one hundred shocks during the minute in which the experiment was performed. The conclusions drawn from Mr. Walsh's experiments were further confirmed by some experiments made on the torpedo at Leithorn, by Dr. Ingenhousz, in 1773.

Mr. Walsh observes, that the electricity of the torpedo resides in those parts that are called his electric organs: the parts bordering on these acting, more or less, as conductors, either through their substance, or by their superfluities: and of these, the parts which conduct the heat are the two great lateral fins bounding the organs outwardly, and the space lying between the two organs inwardly. All below the double transverse cartilages scarcely conduct at all, unless when the fish is just taken out of water and is still wet, the mucus, with which he is lubricated, shewing itself, as it dries, to be of an insulating nature; and the organs themselves, when uncharged, appeared to be, not interiorly but rather exteriorly, as Mr. Walsh supposes, conductors of a shock. We are indebted to Mr. John Hunter for an accurate anatomical description of the torpedo, accompanied with two excellent drawings, which has thus supplied us with a valuable addition to the anatomical examination of this animal by Redi, Steno, and Lorenzini. For his account, we refer to Electric Organs of Fish.

Although Mr. Walsh's experiments leave little room to doubt, that the shock given by the torpedo is produced by the same agent that gives the shock in an electrical explosion, yet there are some circumstances which it is difficult to reconcile to the supposition that it is produced by the electric fluid. One of these difficulties is, that the fish is able to give a shock when he is in the water, and consequently surrounded by a medium, through which the electric fluid is known to be transmitted with the greatest facility. It has likewise been difficult to conceive why the shock of the torpedo, supposing it to be produced by the electric fluid, should not, like that of an electrified jar, be accompanied with the appearance of light or sparks, or should not exhibit some signs of attraction or repulsion. But from Mr. Walsh's experiments it appears, that no light could possibly accompany the shock of the torpedo, because this shock could never be made to pass through the least sensible space of air, or the smallest interruption made by the circuit; not even through the imperceptible interval between the links of a slender brass chain, apparently in contact with each other, nor over an almost imperceptible interval or slit formed by cutting through a slit of tin-foil pasted on sealing-wax, which constituted part of the circuit; nor are the most delicate pith-balls, or other light bodies, in what manner soever applied, in the least degree affected at the time of the shock. Mr. Walsh observes, that, with respect to the pith-balls, it is not surprizing that no motion could be discovered in them, as all his experiments fully shewed that there was no gradual accumulation of the electric fluid, as in the case of charged glasses; but that it was collected or condensed in the very instant of the explosion, by a sudden energy of the animal. He also explains this and the other differences between the phenomena of the Leyden phial, and of the torpedo, or the absence of light and found, in the experiments made with the ladder, by the following considerations.

In a large fish, the number of columns above mentioned, contained in one electric organ, was found to be no less than eleven hundred and eighty-two. This immense collection of cylinders Mr. Walsh considers as somewhat analogous to a large number of jars in an electrified battery, and as containing a very large area in consequence of the great number and extensive surface of the columns. Now it is known, from experiments made with artificial electricity, that though the electric matter violently condensed, or crowded into a very small phial highly charged, is capable of forcing a passage through an inch of air, and that it will afford, in a very conspicuous manner, the phenomena of light, sound, attraction, and repulsion; yet if the quantity thus condensed be expanded and rarified, by communicating it to, or dividing it amongst a large number of jars, whose coated surfaces constitute a space, e. g. four hundred times larger than that of the phial: this same quantity of electric matter, thus diluted, will now yield only the fainter, or, if they may be so called, the negative phenomena of the torpedo. It will not now be capable of passing over the one hundredth part of that inch of air, which, in its condensed state, before sprung through with ease; it will not now be able to jump over the little gap made in its track by the intercession of the tin-foil; no spark, found, or attraction of light bodies, will now be perceived; and yet this portion of electric matter, in this diluted state, and with its elacitity thus diminished, will, like that of the torpedo, to effect its equilibrium, run through a considerable circuit of different conductors, perfectly continuous, and will communicate a sensible shock.

The Hon. Mr. Cavendish has endeavoured to remove the difficulties above stated, first, by some ingenious reasonings a priori, and afterwards by others drawn from the phenomena presented by an artificial torpedo which he constructed, and by means of which he has imitated the effects produced by the living animal. With respect to the diffi-
faculty of conceiving how the torpedo can give a shock in water, he observes that those electricians are mistaken, who suppose that the electric fluid will only pass along the shortest and best conductors. When different circuits are made (e.g. by means of iron wire, and the human body) between the positive and negative sides of a charged jar, some parts of the electric fluid will pass along each of them; though the greater quantity will pass through those in which it meets with the least resistance. Thus, a person may receive a part of the shock given by the torpedo in water, by holding one hand on the lower surface of an electric organ, and the other on the upper, or by applying his hands to other parts of the fish, or by dipping them into the water, so that one hand is nearer to the upper surface of the electric organs than the other; yet the greater part of the shock or charge may pass at the same time in all directions over the surface of the fish, or through the substance of its body, or through the water contiguous to it. With respect to the other difficulties, he solves them by reasonings similar to those urged by Mr. Wallh, and by concouring experiments. Mr. Cavendish has confirmed these reasonings by means of his artificial torpedo, which is a piece of wood A B C D E (Plate XV. Electricity, fig. 4.) of which the part A B C D E is cut into the shape of the torpedo, and 10 inches long from A to D, and 10 inches broad from B to E: the part C F G D is forty inches long, and serves for a handle. M N m is a glass tube let into a groove cut in the wood: W w is a piece of wire passing through the glass tube, and folded at W to a thin piece of pewter, R r, lying flat on the wood, and intended to represent the upper surface of the electric organs: on the other side of the wood there is placed another glass tube, with a wire passing through it, and folded to another piece of pewter like R r, intended to represent the lower surface of those organs. The whole part A B C D E is covered with a piece of sheep-skin leather. In making experiments with this apparatus, after thoroughly foaming it in water of the salt-tubs of the sea, made by dissolving one part of common salt in thirty parts of water, the end of one of the wires is fastened to the negative side of a large battery, and when it is sufficiently charged, the positive side is touched with the end of the other wire; by which means the battery will be discharged through the torpedo. In experiments with this torpedo under water, Mr. Cavendish țakes a trough, A B C D E (fig. 5.), the length B C of which is nineteen inches, the depth A B fourteen inches, and the breadth thirteen inches. The battery which he used was composed of forty-five jars, of very thin glass, dipped in seven rows, and so contrived, that he could use any number of rows at pleasure. Mr. Cavendish was enabled, by means of this apparatus, when immersed in water, to give shocks much resembling those given by the living animal. He felt similar convulsions likewise when he dipped his hands in the water, at the distance of two or three inches from it; and as it is affirmed, that a person accidentally treading on the living fish, when buried in the sand, is sometimes shocked by it, he imitated this experiment with his artificial torpedo, and received shocks from it. The events, indeed, in the greater part of his experiments, too numerous to be recited in this place, with this artificial fish, relative to the shock, seem to agree sufficiently with those made by Mr. Wallh with the living animal. The experiments which Mr. Cavendish made with this machine, relative to the circumference of the shock of the real torpedo not being able to pass through any sensible space of air, appear likewise to correspond with Mr. Wallh's trials. A piece of sealing-wax covered with tin-foil freely conducted a shock from the artificial torpedo; but on making as small a separation as possible through the metal with a penknife, the shock would not pass. See on the subject of this article for Mr. Wallh's papers, Phil. Trans. vol. lxi. part ii. p. 461. Id. vol. lxiv. part ii. p. 464. For Mr. Hunter's paper, Id. vol. lxii. part ii. p. 481. For Dr. Ingenhouz's, Id. vol. lxv. part i. p. 1. For Mr. Cavendish's, Id. vol. lxvi. part i. p. 169. See also Sir John Pringle's Six Discourses, &c. by Dr. Kippis, p. 45, &c.

TORPEDO, a machine so called, invented by Mr. Fulton of the United States, and defined to blow up the largest ships. It is an apparatus of which the principal piece is a copper-box, including a certain quantity of gunpowder, and prepared with an interior spring which sets fire to the powder, at the same time that the whole is inclosed in a covering of cork, or some other light wood, to make the torpedo float under the surface of the water. It is placed under the keel of the vessel to be destroyed, by means of an harpoon directed against the sides of the ship.

TORPEN, in Geography, a town of Transylvania; 4 miles S.S.W. of Bitiriz.

TORPERLEY, a town of England, in the county of Chelfter; 10 miles S. E. of Chelfter.

TORPETCHIN, a town of Thibet; 100 miles S. of Haratoubé.

TORPHICHEN, a parish in the shire of Linlithgow, Scotland, is situated four miles S. by W. from the shire-town, and extends about nine miles in length, and two and a half in breadth. Its general appearance is hilly, particularly towards the E. end, where the hill called Cairn Naple is situate, which is elevated 1498 feet above the level of the sea. The greater part of the parish is enclosed, and where the land is unfit for cultivation, considerable plantations have been made. Coal is abundant; and here are large quarries of excellent freestone; several seams of ironstone, rich in metal; and a strong chalybeate spring. In the year 1811, the population was returned as 1137, occupying 236 houses. The hospital or preceptory of Torphichen, long the principal residence of the knights of St. John of Jerusalem, was founded, in 1120, by King David I. The choir and a square tower still remain, and are fine specimens of the elegance and beauty of the architecture. There are two wings, one on the S. and the other on the N. side; and evident marks of other two on the E. and W. This preceptory had the privilege of sanctuary, which is supposed to have extended a mile in every direction; there is a tower in the church-yard as a centre, and four others at the distance of a mile, E., W., N., and S., with St. John's crofts upon them, which stand about two feet above the surface. At the Reformation, the wall eftates of that opulent order were converted into a temporal lordship, in favour of Sir James Sandilands, Lord St. John of Jerusalem; in which noble family the title of lord Torphichen still remains. Near Loch-Coat, in this parish, are the ruins of a castle, which still display baronial gloom and grandeur. About a mile to the E. of the village, is an altar of four great unpolished whin-זלones, which is said to have been a druidical place of worship; and about a mile to the N.W., is Boudane Hill, upon which are evident marks of a military station.—Beauty's Scotland, vol. iii. Linlithgow. Carlisle's Topographical Dictionary of Scotland.

TORPON, a town of Little Bucharia; 20 miles S.W. of Acula.

TORQUATA, in Zoology, a name given by many authors to the common or water-snake, from the remarkable ring it has about its neck. See Natrix.

TORQUE, in Heraldry, a round roll of cloth twisted and
and studded: such is the bandage frequently seen in armories about the heads of Moors, favages, &c.

It is always of the two principal colours of the coat. The tórque is the least honourable of all the enrichments worn on the helmet by way of crest.

TORQUEMADA, John de, in Biography, a cardinal, was born at the place in Spain whence he took his name in 1388, and entered at the age of 15 into the Dominican order at Valladolid. He distinguished himself at home, in the univerity of Paris, and in various other places, and at length was promoted to the cardinalate, under the title of St. Sixtus, in 1439. After having been successively translated from one bishops to another, he died in 1468, at the age of 80 years. He published a great number of works on theology, and in defence of the papal authority. Among other prefaces which he enjoyed, he was confessor to Isabella of Castile from her infancy; and such was the intimate zeal that actuated him, he extorted from her a promise, that if the ever came to a throne, she would make the chastisement and destruction of heretics his principal object.

Another person of the same name was provincial in New Spain, and published a Spanish work under the title of “Monarquía Indiana;” or, A History of the Wars, Discoveries, Conquests, &c. in the West Indies, in 22 books, 3 vols. fol. 1615. Dupin. Moreri.

TORQUEMADA, in Geography, a town of Spain, in the province of Leon, on the Arzànna; 12 miles E. of Palencia.

TORQUILLA, in Ornithology, the name of a species of wood-pecker, more commonly known by the name of jynx, and called in English the nory-neck.

TORQUINO, in Geography, a river of Cuba, which runs into the Spanish Main, N. lat. 20°. W. long. 76° 37'.

TÔRR, a town of Arabia, in the province of Yemen; 32 miles E. of Loheia.

TORRALBA, a town of Spain, in New Castile; 7 miles N.E. of Ciudad Real.

TORRALVA, a town of Spain, in Navarre, 15 miles from Leltella.

TORRANO, in Geography, a town of Spain, in Navarre; 15 miles W. of Pamplona.

TORRÉ, Filippo del, in Biography, an eminent antiquary, was born at Ciudad de Friuli in 1657, and having acquired an extensive knowledge of jurisprudence, mathematics, and anatomy at the university of Padua, he fought farther improvement at Rome in 1687, and became an academician of the college of the Propaganda. He was afterwards employed as auditor to cardinal Imperiali, in his legation to Ferrara, and accompanying him on his return to Rome, he devoted his attention to the great work on the antiquities of Antium, which he published in 1700. In 1702 he was nominated by pope Clement XI. to the bishopric of Adria, and there he presided with great reputation till his death, in 1717. Among his writings we may mention as the principal, his "Monumenta Veteris Antii," 4to.; besides which, he published several other dissertations on antiquities, natural history, &c. and left many more in MS. Gen. Bifog.

Torre, John Maria de la, a celebrated Italian philologist, was born at Rome in 1710, studied at the Clementine college, and was elected professor of mathematics and philosophy in the college of Ciudad, in the Frioul; and afterwards removed to Naples, where he taught the same sciences in the archiepiscopal seminary. In 1754 he was appointed librarian to the king of Naples, superintending the royal printing-house, and conservator of the museum. In the construction of microscopes he is said to have made considerable improvements. He was a member of the principal academies in Italy, and a correspondent of those of Paris and Berlin, and of the Royal Society of London. He died in March 1782. His works, besides a Treatise on Arithmetic, are, "The Science of Nature," Naples, 1749, 2 vols. 4to.; "Elementa Physice," Naples, 1767, 8vo.; "History of the Phenomena of Vefuvius," ibid. 1755, 4to.; "Microscopic Observations," ibid. 1776.

Torre, in Geography, a town of Spain, in Catalonia; 6 miles S. of Lerida.

Torre del Acri, or Agri, a town of Naples, in Basilicata, on the coast of the gulf of Tarento; 25 miles S.S.E. of Matera.

Torre del Annuntiata, a town of Naples, in Lavora; 9 miles S.E. of Capua.

Torre Cilenza, a town of the island of Corfica; 15 miles N.E. of Ajazzo.

Torre de Candela, a town of Naples, in Capitanata; 11 miles W.S.W. of Manfredonia.

Torre Capigliola, a town of the island of Corfica; 10 miles N. of Ajazzo.

Torre del Capo di Raffo, a town of Naples, in Calabria Citra; 18 miles N.E. of Cañano.

Torre Carabba, a town of the island of Corfica; 10 miles W.S.W. of Vico.

Torre di Codagni, a town of Spain, in Catalonia; 9 miles N. of Puyerdà.

Torre di Fr anonof, a town of Naples, in Lavora; 8 miles N.W. of Capua.

Torre di Galleria, a town of the island of Corfica; 15 miles S. of Calvi.

Torre la Gattarella, a town of Naples, in Capitanata; 2 miles S. of Viefe.

Torre Girolata, a town of the island of Corfica; 20 miles S. of Calvi.

Torre del Grifo, a town of Naples, in Lavora. This town was destroyed by an eruption of Vefuvius; yet the inhabitants, after the eruption, returned and rebuilt the town on the same spot; 5 miles S.E. of Capua.

Torre Maggiori, a town of Naples, in Capitanata; 5 miles S.W. of St. Serviero.

Torre di Mere, a town of Naples, in Basilicata; 20 miles S.E. of Matera.

Torre di Mezzo, a town of Italy, in the department of the Mincio; 16 miles E.S.E. of Mantua.

Torre Molina, a town of Spain, in Grenada; 12 miles from Antequera.

Torre de Monsuro, a town of Portugal, in the province of Tras os Montes, surrounded with a wall, and defended by a baliffion and a caflle. The number of inhabitants is about 1300; 42 miles S.S.W. of Bragança. N. lat. 41°. W. long. 6° 44'.

Torre di Nespoli, a town of the island of Sardinia; 5 miles N. of Orilltagna.

Torre di Negara, a town of Italy, in the department of the Mincio; 11 miles E. of Mantua.

Torre d'Oglio, a town of Italy, in the department of the Mincio, near its union with the Po; 11 miles S.S.W. of Mantua.

Torre del Penna, a town of Naples, in Abruzzo Citra, on a promontory, near the Adriatic; 15 miles E. of Lanciano.

Torre Rosso, a town of Naples, in the province of Otranto; 10 miles N. of Tarento.
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Vega, the fome has any it, has fweet water, VacarelLi, particularly a and brick-duft, feed. his one exciting town a.

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it became dry. The fire, it is thought, would eat along the surface without penetrating deep, when a body of moist watered peat lay below, and not only convert the earth within its reach into brick-dull, but consume many of the incorruptible elastic fibres by which the soil is kept too loose. And by the mixture of incombustible earth checking the rapidity of the combustion, most of the peat would be converted into a sort of charcoal, not ashes. The residue might be mingled with the subsoil, and the field would then be in excellent condition, it is said, for any crop, particularly for turnips; and there is, perhaps, no plant better adapted to such a situation, from its power to refill the autumnal frosts, by which some other cultivated plants are often ruined. See the Paper.

The same writer has, indeed, proved the great disposition of this powdery substance to produce fertility in a variety of experiments, which he has recorded in an elementary work on agriculture, already before the public. See Nisbit's Elements of Agriculture.

**TORREJO,* in Geography,* a town of Spain, in New Castile; 13 miles S. of Madrid.**

**TORREJONCILLOS,** a town of Spain, in New Castile; 20 miles S. of Huete.

**TORRELAGUNA,** a town of Spain, in New Castile; 17 miles N. of Guadalaxara.

**TORRELLA de Mongiri,** a town of Spain, in Catalonia, on the north side of the Ter, near its mouth; remarkable for a battle fought here between the French and Spaniards in the year 1694, in which the latter were defeated; 18 miles E. of Gerona.

**TORREMOCHIA,** a town of Spain, in New Castile; 6 miles W. of Medina.

**TORRENT, TORENS,** in Hydrography,* a temporary stream of water, falling suddenly from mountains in which there have been great rains, or an extraordinary thaw of snow; sometimes making great ravages in the plains.

**TORRENTE, in Geography,* a town of Spain, in the province of Valencia; 5 miles S. of Valencia.

**TORRENUEVA,** a town of Spain, in New Castile; 23 miles S.E. of Ciudad Real.

**TorrERAPA,** a town of Hindoostan, in Lahore; 20 miles W. of Nagorecote.

**TorrES, in Spain,** in the province of Granada, on the coast of the Mediterranean; 9 miles E. of Velez Malaga.

**TorrER, a river of Sardinia,** which runs into the sea, about 10 miles N. of Sassari.

**TorrERo, Cape,** a cape of Spain, on the coast of Aautria. N. lat. 43° 37'. W. long. 5° 44'.

**TorrERs Ilcanos,** a cluster of islands in the Indian sea, near the coast of Sum. N. lat. 11° 25' to 11° 48'. E. long. 95° 50' to 97°.

**TorrERos NOVOS,** a town of Portugal, in Elatremadura; 12 miles E. of Santarem.

**TorrERos VEDROS,** a town of Portugal, in Elatremadura, one of the oldest towns in the kingdom, and containing four churches, an hospital, a castle, four convents, and about 2250 inhabitants; 21 miles N. of Lisbon.


**TORREXIMENO, in Geography,* a town of Spain, in the province of Jaen; 3 miles W.N.W. of Jaen.**

**TORRICELLA,** a town of Naples, in Principato Citra; 4 miles S.W. of Amalfi.—**Alfo,** a town of Naples, in Abruzzo Citra; 6 miles N. of Lauciano.—**Alfo,** a town of Italy, in the department of the Mincio; 10 miles S.W. of Mantua.—**Alfo,** a town of Italy, in the department of the Parno; 8 miles W.S.W. of Modena.

**TORRICEILLI, EVANGELISTA,** in Biography,* a very distinguished mathematician and philosopher, was born at Faenza in 1608, and at the age of eighteen he went to Rome to complete his education, and particularly to extend his acquaintance with mathematicians, under the instruction of Benedetto Castelli, who was professor of mathematics in that city. After the perusal of Galileo's "Treatise on Motion," he composed a work of a similar kind, which being shown to Galileo by Castelli, excited his admiration, and induced him to invite the young author to his house. But as Galileo died three months after his arrival, he proposed to return to Rome; he was diverted, however, from his purpose, by being appointed mathematician and philosopher to the grand duke Ferdinand II., who also advanced him to the mathematical chair at Florence. In this honourable situation he affidavously prosecuted his speculations and experiments, till death prematurely deprived the world of the benefit which could not fail to result from them, in the year 1647, at the age of 39 years. His "Treatise on Motion," already mentioned, was published in a "Collection of his Mathematical Works" in 1644. Of his dispute with Roberval concerning the Cycloid, we have already given a short account under that article. But Torricelli's fame is sufficiently established by his discovery of the true principle upon which the barometer is constructed. (See Torricellian.) Torricelli was no less celebrated for his mathematical knowledge, evinced by his improvement of the science of indivisibles discovered by Cavalieri, and for his acquaintance with the principles of optics, by which he was led to improve the construction of telescopes and microscopes. His discoveries, by which his name is immortalized among the promoters of useful sciences, are recorded in his "Lezioni Academiche," published at Florence in 1715, 4to, by Buonaventura, with the life of Torricelli prefixed. The style with which he wrote in his native language was pure and elegant, and his general character was such as to command the respect and esteem of all who knew him.

**TORRICEILLIAN, a term very frequent among physical writers, used in the phrases Torricellian tube, or Torricellian experiment, on account of the inventor, Torricelli, a disciple of the great Galileo.**

**Torricellian Tube,* is a glass tube, open at one end, and hermetically sealed at the other, about three feet long, and one-tenth of an inch in diameter. See Barometer.

**Torricellian Experiment,* is performed by filling the Torricellian tube with mercury, and then stopping the open orifice with the finger, inverting the tube, and plunging that orifice into a vessel of stagnant mercury. This done, the finger is removed, and the tube sustained perpendicular to the surface of the mercury in the vessel.

The consequence is, that part of the mercury falls out of the tube into the vessel, and there remains only enough in the tube to fill from twenty-eight to thirty-one inches of its capacity, above the surface of the stagnant mercury in the vessel.

These twenty-eight, &c. inches of mercury are sustained in the tube by the pressure of the atmosphere on the surface of the stagnant mercury; and according as the atmosphere is more or less heavy, or as the winds, blowing upwards or downwards, heave up or depress the air, and so increase or diminish its weight and spring, more or less mercury is sustained from twenty-eight inches to thirty-one.

There is a cafe, however, first taken notice of by Huygens (Journal de Scav., 1672, p. 111) in which, if a glass tube of a small bore beventy or eighty inches in length, is well cleaned, and filled with mercury well purged of
of air, &c. in the manner described under Barometer, and then carefully inverted into a vessel of flagrant mercury, the mercury, instead of coming down to the height just mentioned, at which the pressure of the atmosphere is able to sustain it, will continue to fill the tube, and stand at the height of seventy-five inches: but by striking the tube, or gently shaking it, the mercury will descend and settle at its proper height, as in the common barometer. This phenomenon is explained on the principles of the attraction of cohesion, which acts most powerfully in contact: for when the tube is clean, and the mercury well purged of air, many parts of the mercury, which, by the interpolation of small air-bubbles, would be kept from touching the tube, are brought into contact with it, and those particles that are in the middle of the column adhere to those that are next to the sides of the tube, and thus form a compact column. Besides, the increase of attracting surface at the arched top of the tube, by means of which a greater number of mercurial particles may come into contact with the glass than those that recede from the contact of one to another, will also give an advantage to the attraction of the glass, and cause the mercury, immediately in contact with it, to adhere to it. That the attraction of cohesion, as already explained, is the cause of this phenomenon is plain, because the experiment will not succeed when the mercury is not well purged of its air, nor even then if the bore of the tube is large.

The Torricellian experiment makes what we now call the barometer.

**Torrcellian Vacuum**, is the vacuum produced by filling a tube with mercury, and allowing it to descend to such a height as is counterbalanced by the pressure of the atmosphere, as in the Torricellian experiment and barometer. For the method of rendering this vacuum luminous by electricity, see Electrical, Exp. 15.

**Torrichelio**, in Geography, a town of the duchy of Parma, on the Po; 12 miles N.N.W. of Parma.

**Torrizone**, See Zone.

**Torrigia**, or Torreglia, in Geography, a town of the Ligurian republic; 15 miles N.N.E. of Genoa.

**Torrilios**, a town of Spain, in New Castile; 15 miles N.W. of Toledo.

**Torrimore Head**, a cape of Scotland, on the E. coast of the island of Skye. N. lat. 57° 42'. W. long. 6° 2'.

**Torrin-Beg**, a rock on the S.W. of the island of Mull. N. lat. 56° 19'. W. long. 6° 20'.

**Torrington**, or Great Torrington, as it is generally called, to distinguish it from a village of the same name, is a market-town in the hundred of Fremington, and county of Devon, England; 36 miles N.W. from Exeter, and 197 miles W. by S. from London. The town is situated, partly on the summit, and partly on the declivity of an eminence which forms the eastern bank of the river Torridge. On the south side are some fine villages of an ancient castle, the origin of which is unknown; though, according to Ridgion, it was the head of a notable barony, which continued from the Conquest to the time of Edward I. Its feite is now used as a bowling-green, and commands a fine prospect. The river is here feen to flow in a graceful current along a narrow valley, inclosed by sloping ridges, and having a beautifully wooded back-ground. Torrington was formerly invested with the privilege of having representatives in parliament; but no return has been made since the reign of Henry VI. Its government is vested in a mayor, eight aldermen, and sixteen burgesses, who act under a charter granted by queen Mary. The town consists chiefly of one long street, "indifferently beautified," says Ridgion, "with buildings very populous, and flourishing with merchants and men of trade." The population return of the year 1811, states the number of houses to be 414; the number of inhabitants 1571: the chief employ of the latter arises from the woollen manufacture. A weekly market is held on Saturdays; and here are four annual fairs. The parish contains two churches, the most ancient of which is furnished with a library. In the town are some ancient almshouses, possessing the right of commonage on an extensive piece of ground given by William Fitz-Robert, baron of Torrington, in the reign of Richard I. Here is likewise a charity-school for thirty-two boys. Margaret, countess of Richmond, mother of Henry VII., resided some time in Torrington, and was a considerable benefactor to it.

At Fritheletoke, a village opposite Torrington, on the W. side of the Torridge, are the ruins of a priory, founded by sir Roger Beauchamp, in the reign of Henry III., for secular Angliine canons. At the dissolution, the annual revenues were valued at 127/. 22. 4d. The feite of the priory is now a farm-yard. The chief remains of the buildings are the walls of two or three apartments, the west window of the conventual church, which still continues perfect, and the great gate.

Near Torrington is Crofs, late the seat of H. Stevens, esq., a handsome mansion, looking down on the romantic scenery which encompasses the bridge and the banks of the Torridge.

A few miles from Crofs, southward, are the ruins of an old manor called Heanton, formerly a seat of the Rolles, afterwards of lord Orford, and lastly of lord Clinton, who, after its late demolition by fire, cut down the oaks which were in the park, forming woods and groups of the noblest trees in the county.—Beauties of England and Wales, vol. iv. Devonshire, by J. Britton and E.W. Brayley, 1805. Polwhele's History, &c. of Devonshire, folio, 1797.

**Torrington**, a town of the rate of Connecticut; 22 miles W.N.W. of Hartford.

**Torrington Bay**, or Bedford's Bay, a bay on the S. coast of Nova Scotia; 3 miles N. of Halifax.

**Toro**, a river of Africa, which runs into the Scherbro.

**Torriff**, a town of Bengal; 70 miles N.E. of Dacca. N. lat. 24° 20'. E. long. 85° 18'.

**Torrum**, a town of Sweden, in the province of Blekingen; 10 miles S.E. of Carlserna.

**Torryburn**, a seaport town of Scotland, in Fifeshire, on the Frith of Forth, with a good harbour, to which belong thirteen vessels, amounting to upwards of 1000 tons.

**Torsaker**, a town of Sweden, in Angermanland; 27 miles N. of Hernosand.—Alfo, a town of Sweden, in the province of Geftricia; 15 miles S.W. of Gelle.

**Torsang**, a town of Sweden, in the province of Dalecarlia; 10 miles S. of Falun.

**Torsas**, a town of Sweden, in the province of Smalandsland; 18 miles S.S.W. of Calmar.—Alfo, a town of Sweden, in the province of Smalands; 16 miles S.W. of Wexlo.

**Torseera**, a town of Hindoostan, in the circus of Sambulpour; 16 miles S. of Sambulpour.

**Torsella**, a town of Sweden, in Sudermanland, on the river which runs into the Mazar lake; 46 miles W. of Stockholm.

**Toshok**, a town of Russia, on the route from Peterburgh to Moscow; 71 versts distant from Vvihyrov-Volokh, remarkable for a spring supernaturally venerated and attracting pilgrims from all parts. This town has no less than 20 churches, some of stone; and is in a thriving condition. See Tonzok.
TORSIANO, a town of the Popedom; 10 miles N. of Perugia.

TÖRSKOG, a town of Sweden, in West Gothland; 53 miles N. of Uddevalla.

TORSO, a small island on the E. side of the gulf of Bothnia. N. lat. 63° 57'. E. long. 22° 14'.

TORSKA, a town of Sweden, in Helsingland, on a river which runs into the gulf of Bothnia; 6 miles W. of Hudickewall.

TORSUTATAS, a town of East Greenland. N. lat. 59° 56'. E. long. 43° 15'.

TORT, in Law, denotes injustice, or injury, as de font trett mene, in his own wrong, &c.

Hence, also, tort-feafor, &c. The word is pure French, and it signifies the same.

Actions upon torts, or wrongs, are all personal actions for trespasses, nuisances, assaults, defamatory words, and the like.

Tort, Executor de font. See Executor.

TORTICOLLIS, from torto, to twist, and collum, the neck; the Wryneck; which see.

TORTO, in Geography, a small river of Spain, which runs into the Orbeaga, in the province of Leon.—Also, a river of Sicily, which runs into the sea, 5 miles E. of Terminii.

TORTOISE, in Zoology. See Testudo.

Dr. Parsons has remarked a singularity in the structure of the wind-pipe of the land-tortoise, which for a few inches from the epiglottis is single, but soon divides into two; and as it descends with the esophagus, forms a folded ring outward on each side, and turns down again to enter the lungs; so that this animal has the advantage of a double apera arteries, with a solution in each; which proves that this provision is intended to contain a greater portion of air than ordinary, while he is under-ground in winter. It has been observed likewise, that the principal use of the lungs in tortoises is to render them specifically lighter or heavier in the water, by their inflation and compression at pleasure, as fishes do by their swimming bladders; and such a power of long inspiration seems to be as necessary in the land-tortoise as in that of the sea; because, in many countries where they breed, they are known to go into the ground, and lie concealed for several months, and several species of land-tortoises go into ponds or canals in gardens, where they are kept, and remain long under water. Phil. Trans. vol. IV. p. 213.

Tortoise-shell, the shell, or rather scales of the testaceous animal, called a tortoise; used in inlaying, and in various other works, as for inlaid boxes, combs, &c. Mr. Catesby observes, that the hard strong covering, which encloses all sorts of tortoises, is very improperly called a shell; being of a perfect bony contexture; but covered on the outside with scales, or rather plates, of an horny substance: which are what the workmen call tortoise-shell. Phil. Trans. No. 438, p. 147.

It is the testudo imbricata of Linnaeus alone, which furnishes that beautiful shell, so much admired in Europe. See Testudo Imbricata.

The lamellae or plates of the shell of this tortoise, called the hawksbill turtle, are much stronger, thicker, and clearer than those of any other kind, and constitute the sole value of the animal. They are semi-transparent, and elegantly variegated with whitish, yellowish, reddish, and dark brown clouds and undulations, so as to imitate, when properly prepared and polished, one of the most elegant articles for ornamental purposes. These laminae form the external coating, and this is raised or separated from the bony part, which it covers, by placing fire beneath the shell; the heat from causing the plates to split, so as to be easily detached from the bone. These plates vary in thickness, according to the age and size of the animal, and measure from an eighth to a quarter of an inch in thickness. A large turtle is said to afford about eight pounds of tortoise-shell; or, according to M. Schoepf, from five to fifteen or twenty pounds; and unless the animal itself be about the weight of 150 pounds, the shell is not worth much.

"In order to bring tortoise-shell into the particular form required on the part of the artist," says Dr. Shaw, "it is steeped in boiling water, till it has acquired a proper degree of softness, and immediately afterwards committed to the pressure of a strong metallic mould of the figure required; and where it is necessary that pieces should be joined together so as to compose a surface of considerable extent, the edges of the respective pieces are first cramped or thinned, and being laid over each other during their heated state, are committed to a strong press, by which means they are effectually joined or agglutinated. These are the methods also by which the various ornaments of gold, silver, &c. are occasionally affixed to the tortoise-shell, which is not capable of being melted, as vulgarly supposed. The Greeks and Romans appear to have been peculiarly partial to this elegant ornamental article, with which it was customary to decorate the doors and pillars of their houses, their beds, &c. In the reign of Augustus, this species of luxury seems to have been at its height in Rome." Shaw's General Zoology, vol. iii. pt. 1.

The Egyptians, says Mr. Bruce in his Abyssinian Travels, dealt very largely with the Romans in this elegant article of commerce. According to Pliny, the cutting of them for fineering or inlaying was first practised by Carvilius Pollio; and this circumstance leads us to presume, that the Romans were not acquainted with the art of separating the laminae by fire placed in the inside of the shell, when the meat is taken out; for these scales, though they appear perfectly distinct and separate, nevertheless adhere, and more frequently break than split, where the mark of separation may be distinctly seen. "Martial says, that beds were inlaid with it. "Juvenal and Apuleius mention, that the Indian bed was all-over inlaid with tortoise-shell on the outside, and swelling with swelling down within. The immense use made of it at Rome may be inferred from what Vellius Paterculus says, who observes, that when Alexandria was taken by Julius Cæsar, the magazines were so full of this article, that he proposed to have made it the principal ornament of his triumph, as he used ivory afterwards, when triumphing for having happily finished the African war. This indulgence has been, in more modern times, a great article in the trade to China.

Tortoise-shell colour may be given to horn, by first preheating the horn, as in proper plates or scales, and tempering two parts of quick-water, and one part of litharge, to the consistence of a soft paste with soap-ley. Let this paste be laid over all the parts of the horn, except such as are proper to be left transparent, and thus let it remain till it be thoroughly dry; when the paste being brushed off, the horn will be found partly opaque and partly transparent, like tortoise-shell. Semi-transparent parts may be added, by mixing whit with some of the paste to weaken its effect in particular places, by which means spots of a reddish-brown will be produced, which will increase the beauty of the work as well as its resemblance of real tortoise-shell. Haudmann to the Arts, vol. i. p. 518.

Tortoise, in the Military Art. See Testudo.

Tortoise, River of, in Geography, a river of North America, in Louisiana and Florida, formed by the Mississippi.
TORTOLA, a town of Spain, in New Castile; 5 miles N.E. of Guadalaxara.—Alfo, a town of Spain, in New Castile; 8 miles S. of Cuenca.—Alfo, one of the Virgin islands in the West Indies, first settled by a party of Dutch Bascueller, who built a fort for their protection; but who, in the year 1666, were driven out by another party of the same adventurers, calling themselves English, and pretending to take possession for the crown of England: and the English monarch, if he did not confirm the enterprise, made no scruple to take the benefit of it; for Tortola and its dependencies were soon afterwards annexed to the Leeward island government, in a commission granted by king Charles II. to sir William Stapleton. The Dutch had done little towards the cultivation of the island, when they were expelled; but the chief merit of its improvements was reserved for some English settlers from the little island of Anguilla, who, about a century and a quarter ago, embarked with their families and settled in the Virgin Islands; which fee. Tortola is not more than 15 miles long and 6 miles broad. Its chief and almost only staple productions are sugar and cotton. N. lat. 18° 20'. E. long. 64° 52'.

TORTOLI, a town of the island of Sardinia, near the E. coast: 50 miles N.N.E. of Cagliari.

TORTONA, a town of France, in the department of Marengo, on the Scrivia; late the fee of a bishop, suffragan of Milan, with a good citadel, situated on an elevation. This place has often been taken and retaken during the different wars in Italy. It gives name to a district called Tortonese; 9 miles E. of Alexandria. N. lat. 44° 35'. E. long. 8° 52'.

TORTORELLA, a town of Naples, in Principato Citera; 5 miles N.E. of Policastro.

TORTORICI, a town of Sicily, in the valley of Demona; 30 miles N.W. of Taormina. N. lat. 38° 9'. E. long. 15'.

TORTOSA, a town of Spain, in the province of Catalonia, situated near the Ebro, about 15 miles from its mouth; the fee of a bishop, suffragan of Saragossa. It is said to have been founded 2000 years before the Christian era, but the proofs of this illustrious origin are unfortunately lost. Scipio gave it the name of "Dordosa," and made it a municipal city. Among the numerous and trifling combats between the Spaniards and the Moors, there was one in which the women of Tortosa signalized themselves. They courageously mounted the ramparts of their city, and performed such prodigies of valour, that Raimond Berenger, the laft count of Barcelona, interested for them, in 1170, the military order of the hacha, or flambeau. They merited and obtained the fame day several honourable privileges, which exit not at present; they have however preserved the right of precedence in matrimonial ceremonies, let the rank of the men be ever so distingushed. The most remarkable buildings are the cathedral and the castle; the latter of which is a mile square, and in a state of decay; and only serves as a place of residence for a governor; 81 miles S.E. of Saragossa. N. lat. 40° 47'. E. long. 0° 26'.

Alfo, a sea-port of Syria, in the pachalic of Tripoli, long called "Antaradus" and "Orthoia." This town appears to have been built about the fifth or sixth century; it is situated on the sea, and may be about three-quarters of a mile in circumference. The ancient walls are of large hewn stone; without them there are other lower walls, with a fosse round them. At the N.W. corner there are great remains of the castle, and the present town is within the walls of it, which are strong, and built of large hewn stone, justificated. They are of a surpising height, being at least fifty feet high, and the whole is near half a mile in circuit. Within the castle there is a church. Towards the E. cor-
TORTULA.

E.F. Ch. Capfule oblong. Fringe simple, of numerous capillary teeth, spirally and repeatedly twisted together.

This is a most natural genus, the character of whose fringe cannot be mistaken. Barbula of Hedwig differs only in having round-headed male flowers, on a separate plant from the female, instead of axillary bud-like ones, on the same individual. This is a difficult and obscure distinction, without any natural difference. Of Barbula Hedwig defines twelve species, of Tortula three. Of the two genera united, nineteen are now enumerated as natives of Britain and Ireland only, exclusive of five of Hedwig's, not as yet discovered among us, so that twenty-four are known in all.

The habit of the genus here described is rather dwarf; the stems erect, sometimes short or nearly wanting; roots fibrous, mostly perennial; leaves entire; fruit-flasks terminal or lateral; capsule nearly erect, generally even, rarely furrowed; lid conical or awl-shaped; fringe long, brown, or deep red, elegantly twisted, its points rather loose and spreading.

The species are, in many cases, difficult to ascertain, and probably some of the smaller ones are too much multiplied. All our native ones are figured in English Botany. We shall here select some of the principal, in order to exhibit, as in other instances, a comprehensive view of the genus.

T. rigida. Rigid Screw-moss. Fl. Brit. n. 1. Engl. Bot. t. 180. (Barbula rigida; Hedw. Crypt. v. 1. 65. t. 25. Bryum rigidum; Huds. 477. B. acaulon, erica tenuifolia Gerardi folio; Dill. Mucf. 388. t. 49. f. 55.) Stem very short. Leaves spreading, rigid, involute, obtuse, riebels. Capsule cylindrical. Lid conical. Found on rocks, walls, chalky banks and cliffs, bearing capsules in the winter and early spring, not only in England, but in various parts of Europe, from Sweden to Greece. The writer of the present article first discovered and distinguished this humble moss, since the time of Dillenius, on a bank on the right hand of the road from Norwich towards Yarmouth, a little beyond Thorpe. It agrees in size with the most common of mosses, T. muralis, hereafter mentioned, but differs in the thickness and dark colour of its almost linear leaves, which have no hair at the point. The fruit-flask is solitary, red, half an inch to an inch high. Capsule inelining, cylindrical, smooth, dark brown, with a slender veil and lid. Fringe brown, of thirty-two fine teeth. The foliage is incurred when dry.


41. Schrad. Spicil. 66.)—Stem much branched. Leaves all ovate, acute, keeled, with a midrib. Sheaths between the branches, imbricated. More common than the last, in England, Sweden, and Germany, bearing capsules in May. The tusks of this are much higher, the branches being longer and more numerous. Leaves more ovate and pointed; those of the frute more numerous, ribbed, imbricated, not rolled together, differing little from the proper foliage. Fruit-flasks tawny, or red. Capsule erect, somewhat ovate, smooth, with a shorter thicker lid than that of T. convoluta, with which the present species has usually been confounded.

T. flarrellata. Starry Furrowed Screw-moss. Fl. Brit. n. 6. Engl. Bot. t. 2384. (Bryum flarrellatum; Dickf. Crypt. f. 2. 6, excluding the synonyms.) Stem none. Leaves ovate, keeled, incurved. Capsule erect, ovate, somewhat cylindrical, furrowed. Lid oblique. Hitherto gathered only by our great English cryptogamist Mr. Dickson, about Banks, and by the sides of rivers, in Scotland. The synonymy he has applied to it are justly pointed out by Hedwig as erroneous, and belong in fact to three different species. But Hedwig himself error far more unaccountably, in affording Mr. Dickson's moss to be merely T. convoluta. The want of a stem, smaller size of the whole plant, and, above all, the strongly furrowed capsule, singular perhaps in the whole genus, afford sufficient distinctions. The fringe and lid are as long as the capsule; the leaf much longer. There appears to be no frute to the solitary fruit-flask, whose height is half an inch.

T. ruralis. Great Hairy Screw-moss. Ehrh. Crypt. n. 184. Fl. Brit. n. 7. Engl. Bot. t. 2070. (Barbula ruralis; Hedw. Sp. Mucf. 121. Bryum ruralfe; Linn. Sp. Pl. 1581. B. ruralae unguiculatum hirutum, elatius et ramofoius; Dill. Mucf. 352. t. 45. f. 12.)—Stem branched. Leaves obtuse, recurved, hair-pointed; the uppermost flatter. Capsule cylindrical, somewhat ovate. Common on walls, roofs, and the trunks of trees, throughout Europe from Sweden to Greece, bearing fruit from January to April. This is much larger than any of the foregoing, the stems, mostly about two inches high, composing broad cushion-like patches, of a dirty hoary aspect in dry weather; dark green in wet; bearing abundance of upright capsules, on long red flasks, in winter and spring. The leaves, recurved in every direction, are very abrupt, with a strong rib, ending in a long, roughish, wavy hair. Capsule slender, the teeth of its fringe united at the bottom into a firm, partly perforated, tube, which lacks character in this, the subfulata, and a few other Tortula, has given occasion to Mohr to establish a genus by the name of Synricha; but it seems to us better avoided.

T. subfulata. Awl-shaped Screw-moss. Hedw. Sp. Mucf. 122. t. 27. Fl. Brit. n. 8. Engl. Bot. t. 1101. (Bryum subfulatum; Linn. Sp. Pl. 1581. Curt. Lond. f. 3. t. 66. B. capulis longis subfulatis; Dill. Mucf. 350. t. 45. f. 10.)—Stem nearly simple, short. Leaves ovato-lanceolate, pointed. Capsule cylindrical. Lid awl-shaped, straight.—Common in damp shady places, in the southern and middle countries of Europe; rare in Sweden, and even in Scotland. It forms dense perennial tufts, of a fine deep green, bearing capsules in March and April. The leaves are broad, nearly obvate, tipped with a point, sometimes elongated into a hair, when it becomes the T. pilosa of Schrad's Spicilgium, 66. The fruit-flasks are terminal, an inch or more in height, rather stout, but seldom straight. Capsule almost erect, long and slender, with a long taper lid and veil. Fringe united into a spiral tube for three quarters of its length.

T. pilosa.
T. muralis. Wall Screw-mosses. Hedw. Sp. Mucf. 126. Fl. Brit. n. 9. Engl. Bot. t. 2035. Bryum murale; Linn. Sp. Pl. 1584. B. tegulare humile, piliferum in incanum. Dill. Mucf. 355. t. 45. f. 14.)—Stem mostly simple, very short. Leaves ovate, acute, hair-pointed. Capsule cylindrical, slightly elliptical. Lid conical.—This is perhaps the most universal of all mosses throughout Europe. Every wall and bank is covered with it, and the abundant capsules, produced in winter and spring, remain in a dry and empty state almost throughout the year. The roots are perennial. Stems very short, though sometimes divided, composing broad dark-green patches, not dense elevated tufts, and rendered hairy by the terminal white hairs of the leaves. These hairs, however, vary in length, and are sometimes scarcely discernible. Fruit-stalk terminal, straight, reddish-brown, near an inch high. Old capsule a little curved when the fringe falls off. The latter is not so much twisted as in most other species, the teeth, all separate and parallel, making hardly more than one turn. Lid red, not half so long as the capsule, slightly oblique. Veil as long as both together, slender, brownish.

T. cumifolia. Wedge-shaped Screw-mosses. Fl. Brit. n. 10. Engl. Bot. t. 1510. (Bryum cumifolium; Dickf. Crypt. falc. 3. 7. B. murale; Hudf. 477. B. humile, pilis carenis, viride et pellicudum; Dill. Mucf. 356. t. 15. f. 15.)—Stem very short, mostly simple. Leaves obovate, reticulated, pellucid, slightly pointed. Capsule cylindrical. Lid conical.—Found on banks and sandy ground, at Streatham, Surrey, and abundantly about Oxford, according to Dillenius. Mr. D. Turner gathered the specimens figured in Engl. Bot. on some old banks at Hopton, near Yarmouth. This moss is said to be biennial, bearing capsules in the early spring, and composing broad indeterminate patches. When carefully examined, it cannot be confounded with any variety of the last. The leaves are of a brighter green, strongly reticulated, pointless. Capsule more oval, with a longer, more awl-shaped, lid; its fringe bright red, or crimson, repeatedly and closely twisted together, which alone would distinguish this species from the preceding.

T. tortuofa. Frizzled Mountain Screw-mosses. Hedw. Sp. Mucf. 124. Fl. Brit. n. 12. Engl. Bot. t. 1708. (Bryum tortuolum; Linn. Sp. Pl. 1583. Dickf. Dr. Pl. 48. B. cirratum, fetis et capulis longioribus; Dill. Mucf. 377. t. 48. f. 40.)—Stem branched, level-topped. Leaves linear inclining to lanceolate, keeled; twisted and undulated when dry. Capsule cylindrical, slightly ovate. Fringe lax.—Plentiful on the mountains of Wales, Scotland, and the north of England, Derbyshire, &c. as well as in Sweden, Switzerland, Germany, Italy, and, according to Dillenius, in Virginia. It bears capsules in summer, but not very constantly. A large and handsome species, whose stems, from two to four inches high, compose broad and soft tufts, of a most beautiful green, the leaves being long and taper, frizzled when dry, especially at the rough, or minutely crenate, edges. Fruit-stalks an inch and a half or two inches high, bright crimson; pale yellow at the summit. Capsule inclining, slender, smooth, light brown, crimson at the mouth; finally erect. Lid taper, half as long as the capsule. Fringe long, crimson, gradually unrolled, and partly spreading or straight, approaching the character of a Trichostomum. See that article hereafter.

T. barbata. Bearded Lateral Screw-mosses. Fl. Brit. n. 14. Engl. Bot. t. 2391. (Bryum barbatum; Curt. Lond. falc. 4. t. 65. B. anguliculatum et barbatum, tenue et rataletum; Dill. Mucf. 384. t. 48. f. 48.)—Stem branched from the base. Leaves elliptic-lanceolate, spreading, somewhat revolute. Fruit-stalks lateral. Capsule ovate.—Native of walls and barren heaths, in the winter and spring, said to be not unfrequent about London, particularly at Charlton, where nevertheless we have many a time sought it in vain. Mr. Hudson is reported to have confounded this species with T. convoluta, or perhaps nerojofa, above described, though certainly none of the genus can be more essentially unlike. The stems are level-topped, branched from the base, clothed with dark-green, single-ribbed, beardless leaves, recurved when dry; the uppermost forming a kind of flar at the top of each branch. The fruit-stalks seem to spring from the base of each branch; yet the flower, to which each owes its origin, perhaps terminated the flow of the preceding season. Capsule small, erect, ovate, polished. Fringe red, not very much twirled, more than half the length of the capsule. The lid is represented by Curtis nearly as long as the capsule, awl-shaped, and oblique. The specific name was meant to contrast this moss with the following, supposed to have no fringe; so that few names can be more exceptional than either.

T. imberius. Deciduous Screw-mosses. Fl. Brit. n. 15. Engl. Bot. t. 2392. (Bryum imberbe; Linn. Mant. 305. B. tenue, imberbe et pallidum, folis erebririosibus; Dill. Mucf. 382. t. 48. f. 46.)—Stem branched. Leaves awl-shaped, spreading; ovate at their base. Stalks about the upper part of the branches. Capsules cylindrical, somewhat elliptical.—Found on dry banks, walls, and amongst grass, perfecting its capsules very early in the spring. This has much the habit of the last, but its leaves are of a paler yellowish-green, more tapering and channelled, turning inward in drying. Fruit-stalks purplish, an inch high. Capsule more cylindrical and longer, while the lid is shorter than in T. barbata. Fringe light brown, very soon deciduous, whence Dillenius thought it to be wanting, and his definition led Linneus to apply the faulty name, which still sticks to this species.

T. arifata. Short-pointed Screw-mosses. Fl. Brit. n. 16. Engl. Bot. t. 2393. (Bryum arifatum; Dickf. Crypt. falc. 4. 12. t. 11. f. 7.)—Stem branched, level-topped. Leaves oblong, obtuse, with a minute point; curved inward and twisted when dry. Capsule cylindrical.—Found on walls at Croydon, Surrey, by Mr. Dickson, who first described this moss, and to whom we are indebted for specimens. The stems are perennial, branched and level-topped, much in the manner of the last. Leaves rather abrupt, with a very small terminal point: by drying they become twisted, enfolding the branch in a spiral order, and are neither recurved nor inflexed. Fruit-stalks terminal, crimson, scarcely an inch high. Capsule cylindrical, of a light shining brown, thin and semi-pellucid. Lid incurved, tapering, tawny, almost equal in length to the capsule. Fringe soon falling off.

TORURA, or TANTUR, in Geography, a town of Palestine, on the coast of the Mediterranean, called in the scripture Dor, Dora, and Nepheh. Josephus took it from the Canaanites, and it fell to the tribe of Manasseh. Tyrophon, tyrant of Syria, after the murder of Antiochus VI. fled to this place for shelter; but he was soon compelled to abandon it, and shortly after lost his life. In the times of Christianity it was erected into a bishopric under the archbishop of Caesarea. It is at present a village only. The environs abound in grain, cotton, and fruit: wheat in particular is abundant, and of a quality superior to the other parts of Palestine and Syria; 15 miles S. of Acre. N. lat. 32° 34'. E. long. 34° 2'.

TORTURA,
TOR

Tortura, a word appropriated by many medical writers, to express only the distortions of the face, and particularly of the mouth, in convulsions.

Torture, a grievous pain inflicted on a criminal, or person accused, to make him confess the truth.

The forms of torture are different in different countries. In some they use water, in others iron, in some the wheel or rack, in some the boot, thumbkins, &c. See Rack, Boot, &c.

Torture, says archdeacon Paley, (Principles of Mor. and Pol. Philos. vol. ii.) is applied, either to obtain confessions of guilt, or to exasperate or prolong the pains of death. No bodily punishment, however exractuating or long continued, receives the name of torture, unless it be designed to kill the criminal by a more lingering death, or to extort from him the discovery of some secret, which is supposed to be concealed in his breast. The question by torture appears to be equivocal in its effects; for since extremity of pain, and not any consciousnes of remorse in the mind, produces those effects, an innocent man may sink under the torture, as soon as the guilty. The latter has as much to fear from yielding as the former. The infant and almost irrefrangible desire of relief may draw from one sufferer false accusations of himself or others, as it may sometimes extract the truth out of another. This ambiguity renders the use of torture, as a means of procuring information in criminal proceedings, liable to the risk of grievous and irreparable injustice. For which reason, though recommended by ancient and general example, it has been properly exploded from the mild and cautious system of penal jurisprudence established in this country. The enlightened and liberal spirit of modern times has excluded torture from most other countries in Europe; and the revival of it in any nation reflects indelible reproach on the government which countenances it.

The torture, says M. Brugere, is a sure expedient to destroy an innocent person of a weak complexon, and to have a criminal of a robust one. It was a noble faying of an ancient, "They who can bear the torture will die, and also they who cannot bear it."

The marquis Beccaria (chap. 16.) with exquisite raillery proposes this problem: the force of the muscles and the sensibility of the nerves of an innocent person being given, it is required to find the degree of pain necessary to make him confess himself guilty of a given crime.

Tortyra, in Ancient Geography, the name of one of the seven towns which Cyrop gave to his favourite Pythæus, supposed to be in the environs of Asia Minor. Athenæus.

Torup, in Geography, a town of Sweden, in the province of Halland; 12 miles N.N.E. of Halmitad.

Torus, in Architecture. See Torre.

Torus, in Botany and Vegetable Physiology, a name applied by Mr. Salibury to what is termed by Linnaeus either the receptacle of the flower, or a glandular nectary surrounding the bafe of the germen. Jullieu and his followers call tidsitus hypergynus, alluding to its form, as well as situation. The word torus is very descriptive, as expressing the frequent resemblance of the part in question to what vulgarly sustains an architectural column, and it is certainly preferable to the compound appellation just mentioned. A very curious lobed and plated torus may be seen in Cobera, but we believe it to be strictly a glandular nectary. Mr. Brown's natural order of Epacridace contains some genera with five separate glands, of a like nature, indubitably (in our opinion) nectariferous; and others with an interrupted annular nectariferous disk, or torus, under the germen. It does not follow, because Linnaeus has sometimes misapplied the term nectarium, that there is no such thing in nature; but his opponents have wished to obscure and invalidate that term, because he has in general, with so much originality and success, employed it for the clear and concise differentiation of genera. This displays a want of candour, unbecoming disinterested students and admirers of Nature.

Torus, in Ancient Geography, a mountain of Sicily, between Heraclæa and Agrigentum.

Toruscula, a word used by some medical writers to express a drop.

Tory. See Tories.

Tory Island, in Geography, an island lying north of Bloody Farland Point, in the county of Donegal, about 67 miles from the main land. It is said to be extremely fertile.

Toryne, in Pharmacy, the name of a kind of spatula intended for flirring up the ingredients of decoctions while boiling.

Torynetos, a name given by some to a mixture of bread and water boiled together, whether meant as a kind of apanade, or for a poultice.

Torza, in Geography, a town of Persia, in the province of Irak; 40 miles E. of Hamadan.

Torsok, a town of Ruffia, in the government of Tver, on the Tverza; 40 miles W.N.W. of Tver. N. lat. 57°. E. long. 35° 14'. See Torosk.

Tosa, a sea-port town of Spain, in the province of Catalonia; 23 miles S.S.E. of Gerona. N. lat. 41° 43'. E. long. 2° 48'.—Also, a river of Italy, which runs into lake Maffone; 4 miles N. E. of Orthez.—Also, a town of Japan, capital of a province of the island of Tsuoke, on the south coast. N. lat. 33° 40'. E. long. 134° 57'.

Tosale, in Ancient Geography, a town of India, on the other side of the Ganges, and near it, which had the title of metropolis. Ptolemy.

Tosanlu, a river of Natalia, which waters the city of Tocat, and afterwards joins the Jekilermak. It was anciently called Lycus.

Tosarcan, a town of Persia, in the province of Irak; 21 miles S. of Hamadan.

Toscanelia, a town of the Papedom, in the Patrimonian, the see of a bishop, suffragan of Viterbo; 9 miles W.S.W. of Viterbo. N. lat. 42° 24'. E. long. 11° 52'.

Toscanni, Paolo, in Biography, an eminent astronomer, was born at Florence in 1397. Declining the profession of his father, who was a physician, he devoted himself to the study of geometry and astronomy, and also of the Latin and Greek languages. He was one of the curators of Niccol's library, and conversant with the folar motions. He corrected the astronomical tables of Alphonso and the Arabsians. Of his astronomical tables he left a memorial in the great dial fixed upon the metropolis church at Florence, erected about the year 1468. He died in 1482, at the age of 85.

Toscolano, in Geography, a town of Italy, in the department of the Benaco, on a small river which runs into lake Garda. Here is a manufacture of cloth, with some paper and iron-mills; 6 miles E.N.E. of Salo.

Tosea, a town of Sweden, in West Gothland; 20 miles W.N.W. of Uddevalla.

Tosi, Giuseppe Felice, of Bologna, in Biography, maestro di capella at Venice the latter end of the 17th century, and composer of five operas for that city between the years 1684 and 1690. (Gloria della Poesia.) Beside these dramas, he composed others for Bologna. His name, however,
however, will be longer remembered by the merit of his son, than by his musical productions, which have been long 
loft and forgotten. See the next article.

Tosi, Pier Francesco, Accademico Filosomico di Bologna, 
and not only an eminent opera singer, in soprano, during 
his youth, but a composer of cantatas, in which the recita-
tives were particularly impassioned, energetic, and impref-
five, and author of an excellent treatise on singing, well 
known in England, by the late Mr. Galliard's admirable 
translation.

The author of this treatise seems to have had no parti-
ality for rapid execution. His own favourite style of sing-
ging was the pathetic, which he describes and recommends by

excellent precepts. Though this elementary treatise has been 
written more than fourscore years, no work of the same 
kind has been produced in Europe since its publication, but 
upon Tosi's model, and in confirmation of his precepts. 
The excellent composer of the old school, Galliard, a pro-
found and experienced judge of every species of musical 
merit, not only recommended its perusal to the first musical 
professors, instrumental as well as vocal, by an admirable 
translation and notes in 1740, but by his encomiums in-
fantly excited it into a classical work.

In 1757, Agricola, opera compose to Frederic II., king 
of Prufia, and the bel Cantor of Rome, published a 
translation of it with useful and instructive notes, which 
made the work well-known in Germany; a knowledge 
which Hilles of Leipzig much increased by frequent ex-
trasts from it, in his musical journals.

And in 1774, Mancini, singing-master to the arch-
duchesses at Vienna, published a treatise on singing of great 
merit, founded on the work, and confirming the principles 
of Tosi, of whom he speaks with the highest respect in his 
chapter on "Intonation." "Giuoro non poco si ò gi-
fare leggera nel libro tanto stimato di Pier Francesco 
Tosi. A carte 12, la spiegazione, che esso fa sopra il 
fenimento maggiore, e minore, appunto per favore la quan-
tità degli intervalli, o fra delle come, che li compone."—"It 
will be of no small service to flouds in singug, if they 
read in the work of P. F. Tosi, (p. 12 of the original,) 
the explanation which he gives of major and minor femi-
tones, that they may know precisely the quantity of the 
several intervals, or rather commas, of which they are com-
posed." See Mancini, for the original title and further 
account of his book.

Of Tosi's life but little is known, except from Galliard's 
prefatory discourse to his translation; who tells us that he 
was a singer of great elocution and reputation. He sung on 
the stage at Venice in 1707, in the opera of "Olimbro," 
written by Apolito Zeno, and set by Galipari, where he 
is styled Virtuoso di S. A. Elettore Polatina. He spent 
the chief part of his time, according to Galliard, in travel-
ning, and by that means heard the most eminent singers in 
Europe; whence, by the help of his refined taste, he made 
the observations which are contained in his book. Among 
many excursions, his curiosity was excited to visit England, 
where he resided for some time in the reigns of king James II., 
king William, George I., and beginning of George II. 
He was very much esteemed by persons of rank wherever 
he went; among whom, in England, was the late earl of 
Petersborough, whom he had often met in his travels on the 
continent, to whom he had dedicated his book, though it 
was printed at Bologna in 1723, some time after he had 
quitted England. The emperor Joseph I. gave him an 
honourable employment in some part of Italy, and the 
archduches, a church retirement in Flanders, where he 
died.

The original title of his book, which is now become 
known, is, "Opinione de' Cantori Antichi e Moderni e 
Sieno Offervazioni sopra il Canto figurato:" 8vo.

The earl of Peterborough, to whom he dedicates his book, 
was one of the best informed judges of dramatic music and 
performance in his time. He married the amiable and ac-
complished Mrs. Annalisa Robinbon, after a very long 
courtship. (See her article.) Tosi used to meet Bonon-
cini, and all the first opera singers of the time, at the earl's 
villa, at Paron's Green; and we remember hearing Monti-
celli, Regimeli, and Munzoli, speaking with great respect of 
the "Trattato di Tosi."

TOSIA, in Geography, a new town of Asia Minor, 
in Natolia, built on the side of a hill, at the foot of which 
was a fertile country; 70 miles S.S.W. of Sinob.

TOSICIA, a town of Naples, in Abruzzo Ultra; 
7 miles S. of Teramo.

TOSINO, a river which crosses the marquise of An-
cona, and runs into the Adriatic, N. lat. 42° 57'; 
E. long. 13° 55'.

TOSMUANASSA, in Ancient Geography, a town of 
Asia, in Bactria. Ptolemy.

TOSNA, in Geography, a river of Russia, which runs 
into the Neva, near Pella, in the government of Pswterburg.

TOSNITZPACH, a river of Austria, which runs 
into the river Erlebach, 2 miles below Scheibs.

TOSOLIC, a town of Styria; 35 miles S. of Tourfan.

TOSON-HOTOC, a town of Chines Tartary; 88 
miles S.S.W. of Haratouche.

TOSPITES, in Ancient Geography, a country of Asia, 
in Greater Armenia, S. of the sources of the Euphrates and 
Tigris. Ptolemy.

TOSQUIATOSSY CREEK, in Geography, one of the 
branches of the Allegany river.

TOS, a river of Switzerland, which runs into the 
Rhine, 2 miles S.E. of Egfland, in the canton of Zurich.

TOSSAQUA, a town of Peru, in the audience of 
Quito; 110 miles W. of Quito.

TOSSE, a town of France, in the department of the 
Landes; 12 miles W. of Dax.

TOSSIAT, a town of France, in the department of the 
Ain; 7 miles S.E. of Bourg-en-Bresse.

TOSSIGNANO, a town of Italy, in the department of 
the Amone; 13 miles W. of Ferrara.

TOSSO, a town of Sweden, in West Gothland; 42 
miles N.E. of Uddevalla.

TOST, or Toschek, a town of Silefla, in the princi-
pality of Oppeln; 26 miles S.E. of Oppeln.

TOSTA, a river of Mexico, which runs into the Pacific 
Ocean, N. lat. 12° 30'.

TOSTAR, or Suster. See SHUS, SHUSTER, and 
SUSU.

TOSTERYD, a town of Sweden, in Smaland; 22 
miles S. of Jonkioping.

TOSTES, a town of France, in the department of the 
Lower Seine; 12 miles S.W. of Arques.

TOSTO, Cape, a cape on the N. coast of Spain. N. 
lat. 43° 15'; W. long. 9° 10'.

TOSUN HOTUN, a town of Thibet; 508 miles W.S.W. 
of Tourfan. N. lat. 41° 55'; E. long. 99° 10'.

TOT VARADIN, a town of Hungary; 24 miles S.E. 
of Boros Jeno.

TOTA ISLAND, or Island of Plantains, an island of 
the Atlantic, near the coast of Africa, at the mouth of the 
Sherbro.

TOTANA, a town of Spain, in the province of Murcia; 
11 miles N.E. of Lorca.
TOTANO, or Totanus, in Ornithology, the name of a bird common in the Italian markets, and more usually
known by the name of *Vetola*; which see.

The totanus of Linnaeus is a species of *Scolopax*, (which see), and the *crex* of other authors. See Rall.

TOTANUS is also used by some for the *Linnaea*; which see.

TOTAQUESTAC, in Ornithology, the name of a beautiful
American bird, described by Nieremberg from Anto-
nius Herrera. It is said to be something smaller than a
pigeon, and all over of a most beautiful green; its tail-feathers
are of a very great length, and are greatly esteemed.

The Indians value the bird so highly, that it is death by their
laws to kill it, so that when it is caught they only fry it and
let it go again. Ray.

TOTEN, in Geography, a town of Norway, in the pro-
vince of Aggerhusen: 47 miles N. of Christiania.

TOTES, a town of France, in the department of the
Lower Seine; 14 miles N. of Rouen.

TOTEZVA, a town of Hungary, on the river Bodrog;
5 miles S.W. of Patak.

TOTFALU, a town of Hungary; 5 miles N. of
Siclos.—Alfo, a town of Hungary; 8 miles W. of
Podolizec.

TOTILA, in Biography, king of the Ostrogoths in
Italy, was a commander of the Gothic garrison at Trévigo,
and upon the deposition and murder of his uncle Eraric, was
chosen to succeed him A.D. 541. After several successful
conflicts with the Romans, and the capture of their chief
cities, he advanced to Tibur, within eighteen miles of the
capital. In every step of his progress his conduct was con-
ciliatory; he restrained his soldiers, in the career of victory,
from all acts of licentiousness; and by the exercise of hu-
morality and liberality, he attached to his service and cau-
sed his vanquished enemies. Upon his approach to the capital,
the emperor Justinian was alarmed, and recalling Belis-
farius from the Persian war, sent him, already renowned for his
character and exploits, to its relief. Failing in his attempts
to throw succours into the city, he withdrew, and abandoned
it to the direst of famine; so that those inhabitants who
could make their escape deserted it, and those that remained
importunately solicited the governor to capitulate. At
length the Roman garrison retired, and one of the gates
was opened to the Gothic troops, by which Totila entered
the city December 17, A.D. 546. Although the con-
queror spared the lives of the inhabitants, he allowed his
soldiers to pillage the city, and by so doing reduced the
wealthy senators and their families to absolute beggary.
Having convened those few of this rank that remained, he
reprehended and threatened them; but pacified by the
intercession of Pelagius, he sent a respectful message to Ju-
tinian, offering to live with him upon amicable terms; and
yet intimating, that on the rejection of his proposal he would
utterly destroy Rome, and remove the seat of war to Illyri-
cum. The emperor referred him for an answer to Belis-
farius, upon which flight he began to demolish the city. As he
was proceeding in the work of destruction, Belis-
farius recon-
municated with him on the barbarity of his conduct, and
so far succeeded as to induce Totila to desist, and to march
off, with his troops and the senators, to Lucania. The remaining
inhabitants were dispersed in exile, and Rome was for
forty days in a state of total depopulation. Belis-
farius seized the opportunity of taking possession of the city, repairing
the fortifications to the utmost of his power, and cau-
sing the inhabitants. Upon receiving this intelligence, the Gothic
sovereign returned, and having made many unsuccessful
attempts for regaining possession of the city, and, sacrificed, in
repeated assaults, the choice of his troops, he was under a
necessity of decamping, and of marching, with degraded
reputation, and a discontented army, to the siege of Pe-
rugia. He contrived, however, to regain the confidence of
his troops, and after obtaining a reinforcement, marched
again for Rome, and by the treachery of some Ifaurian
centinels, became master of the city. Experience had now
taught him wisdom; and he adopted every measure which
found policy dictated for conciliating his enemies. He not
only repaired the walls and edifices which he had demol-
ished, but recalled the senators, and restored them to their
rank, and at the same time invited the citizens to take po-
fession of their property, supplying them in the mean while
with provisions. He also exhibited the Circenian games,
and prefided at them with the dignity of a Roman emperor.

Totila renewed his embassy to Justinian, making an offer
of peace and alliance; but the emperor would not admit the
Gothic ambassadors to an audience. The Gothic sovereign
was incensed by this treatment; and setting out a powerful
fleet, took Rhegium and Tarentum, and passed over to Si-
cily, which he speedily reduced and pillaged; and having
made himself master of Sardinia and Corsica, and ravaged
the whole sea-coast of Greece, whilst his troops were be-
flying Ancona, his fleet was defeated, so that he was obliged to
raise the siege, and soon after he left Sicily. Justinian,
encouraged by these fortunate events, determined to pre
serve Italy from the power of Totila; and having recalled Beli-
farius, devoloped the command of his army on Nares, who
marched directly to Rome, and meeting Totila in his pro-
gress, presented to him the emperor's message, which was
merely an offer of pardon. Totila seemed to regard it as an
inult, and replied, that he would conquer or die. In the
furious combat between the hostile armies that ensued, the
Goths were driven from the field of battle, and Totila fled
with no more than five attendants. In his flight he was
overtaken by Abad, a leader of the Geopides, who pierced
him through the body with a lance. His faithful com-
panions hurried him away seven miles beyond the scene of
action, and had him wound dressed; but he soon after ex-
pired. A private burial terminated the glory of this con-
queror of Rome, whom his eulogists have celebrated for va-
our tempered by humanity and moderation, and for a go-
vernment conducted with a regard to justice and equity.

With this battle, fought in July 552, the 11th year of To-
tila's reign, the triumph and dominion of the Goths in Italy

TOTMA, in Geography, a town of Russia, in the go-
vernment of Vologda. In the environs are several salt-pits;
92 miles N.E. of Vologda. N. lat. 68° 16'; E. long.
42° 34'.

TOTNESS, an ancient borough and market-town in the
hundred of Corderidge, and county of Devon, England; is
situated on the banks of the river Dart, 22 miles S.S.W.
from Exeter, and 105 miles W.S.W. from London. It
ranks among the most ancient towns in the kingdom; and if
credit could be given to Geoffrey of Monmouth, would
assume an origin coeval with the first; for here, according
to this author, Brutus first landed; and the inhabitants,
to corroborate the tale, still point out a dolmen near the
spot where the eait gate stood, as the very one on which he
first set his foot. It is certainly, however, of remote antiquity;
for Leland mentions that the Roman fos-s-way, extending
through Devonshire and Somersetshire, began here; and
Ridgton quotes a passage from Bede, which notices the ar-
ival of Ambrosius and Uther-Pendragon at Totnes, when
they returned from Bretagne to oppose the tyranny of
Vortigern. The feite of the town is peculiarly fine; from the
margin of the Dart it cliines the steep acclivity of a hill, and
stretches itself along its brow; commanding a view of the
winding stream and the country in its vicinity; but sheltered
by
by higher grounds on every side. The piazzas in front of the houses in some parts of the town, and the higher stories projecting over the lower, are manifest proofs of its antiquity; a claim which is strengthened by the keep of its castle, a large circular building, cżsettled, rising from an immense artificial mound. This castle, according to Brown Willis, was erected by Judith de Totnes (to whom the manor was given by the Conqueror), and made the head of his barony. During his residence here, he founded a priory for Benedictines, which continued till the dissolution, when its annual revenues were estimated at 124l. 10s. 3d. The manor was granted in the reign of Henry VII. to Richard Egeecumbbe, whose son, or grandson, in the second year of Elizabeth, conveyed it to the corporation, according to the right of a burgessHIP to his heirs for ever. Totnes was incorporated by charter of king John; and has had its privileges confirmed by several succeeding sovereigns. The corporation is vested in a mayor, recorder, thirteen burgoomasters, and twenty common-councillors. The borough first sent representatives to parliament in the 23d of Edward I. the right of election is in the corporation. At the period of the Norman survey, Totnes had immunity from taxation, excepting at those times when Exeter was rated. The parish-church is a handsome edifice, having a well proportioned tower at the west end. The date of its foundation was unknown till the year 1799, when the south-east pinnacle was struck by lightning, and in its fall bent in the roof of a small room over the porch. In this room were two chests of old records, which became exposed by this accident, among them was found a grant of indulgence from bishop Lacey, "to those people who had or might contribute to the rebuilding of the church at Totnes." This was dated at Chudleigh, where the bishops of Exeter had a residence in 1432. The chancel is separated from the body of the church by an elegant screen of ornamented tracery in stone-work; but the altar-piece, instead of corresponding with the rest of the building, is of Grecian design, having a semi-dome supported by Corinthian pillars. Totnes consists principally of one street, about three-quarters of a mile in length, terminated on the E. by a bridge over the Dart: the town was formerly surrounded by a wall, and had four gates: the east and north gate-houses are now standing. By the population return of the year 1811, the houses were estimated at 3277, the number of inhabitants at 2733. Many of the labouring classes derive employment from the woollen trade, which is rapidly increasing. Five fairs are held annually, and a market weekly, on Saturday.

Edward Lye, the learned author of the Anglo-Saxon and Gothic Dictionary, published in 1772, was a native of Totnes; as was also Dr. Benjamin Kennicott, well known for his collection of Hebrew MSS. The former died in 1769, the latter in 1783.

About two miles below Totnes, on the brow of a thickly wooded declivity which rises from the margin of the Dart, is Sharpam, the seat of Edmund Baillart, Esq. The mansion, an elegant building of freestone, was erected by captain Powall, who lost his life at the moment of victory in a naval engagement during the American war. The daughter of that gentleman married Mr. Baillart.

On the easterm shore is Greenaway, a feast for many generations polished by, and a residence of the family of Gilbert. Of this family, and born here, was Sir Humphrey Gilbert, a celebrated voyager in the reign of Elizabeth: to him this kingdom is indebted for the discovery and settlement of Newfoundland.—Warner's Walk through the Western Counties, 8vo. 1800. Beauties of England and Wales, vol. iv. Devonshire: by J. Britton and E. W. Brayley, 1803. Polwhale's History, &c. of Devonshire, folio, 1797.
part of the last century. The parish-church is built of heav'n stone, flints, and pebbles, and consists of a chancel, nave, two aisles, and a square embattled tower. On the south side of the church is a large brick porch, built, as appears by the architecture, about the beginning of the sixteenth century. At the east end of the north aisle is the vestry, erected in 1606, by Henry, lord Coleraine, and repaired, pursuant to his will, in 1792. The building is semi-circular at the east end; its roof is in the shape of a dome. The font is octagonal, richly ornamented with tracery, and the devices of a mermaid, pelican, &c. Monuments and other sepulchral memorials abound in every part of the church. David, king of Scotland, gave this church, in the twelfth century, to the canons of the Holy Trinity in London; after the dilution of that monastery, the rectory manor and the advowson of the vicarage were granted, in 1544, to the dean and chapter of St. Paul's, in whom they are still vested. There is a considerable Quaker's meeting in this parish, and a chapel belonging to the Methodists. An almshouse for four men and four women was founded and endowed, in 1603, by Balchafir Sanchez, a Spaniard. A similar establishment for six men and six women was built in 1736, pursuant to the will of Nicholas Reynolds, esq.; who also made provision for a school, for twenty poor children. By the bequests of Sarah, duchess dowager of Somerset, the school-house was enlarged, and the benefits extended to all the children of such inhabitants of this parish as were not poor of an estate of 20fl. per annum. A charity-school for girls was established in the year 1735; also a Sunday-school for boys, and a school of industry for girls, in the year 1790. According to the return made to the population act in 1811, the number of houses in this parish was 873; of inhabitants 4571. —Lyfons's Environs of London, vol. iii. quarto, 1792, 1811. Dyfon's History of Tottenham High-Crofs, octavo, 1792.

TOTTIUM, a town of Hindooftan, in the Carnatic; 24 miles W.N.W. of Titchincholly.

TOttWELL, a town of Switzerland, in the county of Baden; 4 miles S.W. of Baden.

TOVALEY, a town of Hindooftan; 16 miles S.E. of Travancore.

TOUCAN, otherwise called anser Americana, in Africology, a modern constellation of the southern hemisphere, consisting of nine small stars. See Constellation.

TOUCAN, in Ornithology. See Ruphaustes.

TOUCH, or Toque, in Costume, the manner of expressing the fineness of gold and silver in China, by dividing it into 100 parts, so called; thus, if it be 93 touch, it contains seven parts of alloy in 100. The Chinese in general take French silver coin at 95 touch (the better informed taking it only at 93), and English silver at 94 ditto; Spanish dollars at about 92; Siam ticals, and Madras rupees, at 98; and Rajamole rupees at 99 ditto.—Also a method of trying the fineness of gold and silver in many places, by means of a stone called touch-stone.

TOUCH, in Mufic. An organ is said to have a good touch, or flop, when the keys clofe, and lie down well, being neither too loofe, nor too fliff.

TOUCH, in Ship-Building, the broadest part of planks worked top and butt, which place is fix feet from the bottom; or, the middle of a plank worked anchor-flock fashion. Also, the angles of the ftern-timbers at the counters, &c.

TOUCH the Wind, in Sea Language, is when the Reafon of the helm is bid to keep the ship as near the wind as may be. See Touching.

TOUCH-Mc-Noh, in Botany. See Impatiens and Mordica.

Touch-Hole, or Vent, in Gunnery, is the small hole at the end of the cylinder of a gun or musket, by which the fire is conveyed to the powder in the chamber.

In a fire-lock, carabine, or piétol, it is called the touch-hole; but in a piece of cannon, it is more properly called the vent.

Touch-Needles, small maffes of gold, silver, and copper, each pure and simple, and in all the different combinations, proportions, and degrees of mixture, prepared for the trying of gold and silver by the touch-stone; by comparison with the mark they leave on it.

The metals usually tried by the touch-stone, are gold, silver, and copper, either pure, or mixed with one another in different degrees and proportions by fusion. In order to find out the purity or quantity of bafier metal in these various admixtures, when they are to be examined, they are compared with these needles, which are mixed in a known proportion, and prepared for this ufe. The metals of these needles, both pure and mixed, are all made into lamina or plates one-twelfth of an inch broad, and of a fourth part of their breadth in thicknes, and an inch and half long; these being thus prepared, you are to engrave on each a mark indicating its purity, or the nature and quantity of the mixture in it.

The manner of making the touch-needles is by the proportions of the mark, a weight of half a pound, or eight ounces, being divided into sixteen half-ounces, the half-ounces each into four drachms, the drachm into four pennyweights, and this into two half-pennyweights.

Touch-Needles, Silver: these must be only tempered with copper, and the proportion determined by the mark divided into half-ounces and grains.

You must therefor for this purpose one mark of such a weight, that it may conftitute a fufficient maff of metal for the making of one needle; let it weigh, for instance, one drachm, then weigh such a mark of the puref silver, wrap it up in a fmall paper, and upon this write sixteen half-ounces, which will signify that the whole mark of this metal is the puref silver, and make the first needle of this mafs.

Next weigh fifteen half-ounces of pure silver, and one half-ounce of pure copper; wrap thefle both in a paper, and write on it fifteen half-ounces, which will signify that there are in that small maff fifteen parts of pure filver, and one part of pure copper; make of this the second needle. In the fame manner go on with the rest, add two half-ounces of copper to fourteen half-ounces of filver, mark it fourteen half-ounces, make the third needle of this; and in the fame manner proportion the small maffes of filver and copper for making the other needles, and put incriptions upon every one in the following manner.

| 1 — 16 | 0 — 10 | 1 — 15 |
| 2 — 15 | 1 — 9 | 2 — 14 |
| 3 — 14 | 2 — 8 | 3 — 13 |
| 4 — 13 | 3 — 7 | 4 — 12 |
| 5 — 12 | 4 — 6 | 5 — 11 |
| 6 — 11 | 5 — 5 | 6 — 10 |
| 7 — 10 | 6 — 4 | 7 — 9 |
| 8 — 9 | 7 — 3 | 8 — 8 |
| 9 — 8 | 8 — 7 | 9 — 7 |
| 10 — 7 | 9 — 6 | 10 — 6 |
| 11 — 6 | 10 — 5 | 11 — 5 |
| 12 — 5 | 11 — 4 | 12 — 4 |
| 13 — 4 | 12 — 3 | 13 — 3 |
| 14 — 3 | 13 — 2 | 14 — 2 |
| 15 — 2 | 14 — 1 |

For the needle | half oz. of silver | half oz. copper
When you have the metals in each of their due proportions, each being wrapped up in its separate paper; put each separately into a crucible never used for any operation, and, adding a little borax, melt them together in a very quick fire, which must be well kindled before with bellows; or, what is yet better, throw them suddenly into a hot crucible, and as soon as they melt, stir them with a dry wooden peg, burnt at the end, and pour them immediately into an ingot. When this is done, wrap up each mass, when cold, in its own paper again, and weigh them finely, in a nice balance; if they still weigh a whole mark, they are good; but if there is any considerable deficiency in their weight, it is a sign that your fire, having been too weak, or of too long duration, has consumed as much copper as is wanting in the weight; therefore this mass must be esteemed useless, and another made in its place in the same proportion.

When this is all finished, make with the hammer out of each of these small masses, a needle, making them a little hot; then engrave on each of these needles the number of half-ounces it contains, as before marked on its paper; that is, upon the first sixteen, upon the second fifteen, and so on; and then pierce them at one end, and running a silver wire through their eyes, collect them in order according to their different numbers. These are the silver touch-needles, made of the different alloys of silver and copper.

In Holland they make use of the mint mark, divided into grains, for the making of their needles. The first needle made of pure silver is said to be of twelve pennyweights. The second is made of eleven pennyweights, and eighteen grains, by the addition of six grains of copper. The third is made of eleven pennyweights and twelve grains, by the addition of twelve grains of copper; and so on, the proportion of silver decreasing always six grains, that is, one quarter of a pennyweight at a time, and that of the copper being always increased in the same proportion, till at last the weight of the silver is reduced to one pennyweight, and that of the copper increased to eleven pennyweights, which proportion constitutes the last needle.

It is needles, however, to go through the whole series of the needles, by so small progressions to the very last, for very delicate proportions cannot be very accurately distinguished in the operation.

**Touch-Needles, Gold.** These must be mixed either with silver alone, or with silver and copper variously intermixed. This mixture is called allowing or carating, and is determined by a mark divided into twenty-four carats, or weights of two-sixth parts of an ounce. There is nothing to be observed about the making of these needles, beside what has already been said in regard to the silver needles; except that the proportions of the weights are determined in another manner. These needles are made according to the following division and order; and they all weigh one mark.

The first is totally of pure gold, or of 24 carats.

| 2 | 23 car. 6 gr. | 6 gr. | 1 car. |
| 3 | 23 car. | 1 car. |
| 4 | 22 car. | 1 car. | 6 gr. |
| 5 | 22 car. | 2 car. |
| 6 | 21 car. | 2 car. | 6 gr. |
| 7 | 21 car. | 3 car. |
| 8 | 20 car. | 3 car. | 6 gr. |
| 9 | 20 car. | 4 car. |
| 10 | 19 car. | 5 car. |
| 11 | 18 car. | 6 car. |

The decrease goes on thus, by whole carats, till the weight of the gold is arrived at one carat, and that of the silver at twenty-three; for after the ninth needle, you cannot make so exact a distinction of the half-carats.

**N.B.** The carat is divided into twelve grains.

This mixture of the gold and silver is called the white alloy; but when copper together with silver enters into the mixture of the gold, then it is called a mixed alloy. The needles for trial of pieces thus debased, are made of mixtures analogous to the former, except only that those portions, which in the first case were pure silver, here consist of copper and silver mixt. Therefore you have a double series: for the mixture is either of two parts of silver and one of copper, or of two parts of copper and one of silver. For instance,

The first is of pure gold.

If in this table you take pure copper instead of pure silver, and silver instead of copper, this gives you a third series of golden needles. And you may have a fourth by mixing with gold equal quantities of silver and copper in the same proportion. These alloys of gold are much in use, but workmen may easily employ a number of other variations, which, compared with those already mentioned, will be distinguished into a thousand different ways by an experienced person, so that it is neither possible, nor necessary to imitate them all.

But that these golden needles may not be too expensive, they may be made much shorter than those of silver, and afterwards folded to plates of copper, that may be sufficiently strong for use.

The use of these needles is by means of the touch-flone; and arises hence, that every metal when pure must have its specific colour, that distinguishes it from the rest: but metals being the most opaque of all known bodies, the specific colour of every one appears most distinctly when you rub it against a very black hard stone; and if the colours of two or more metals are expressed by large lively spots, made near each other on the same plane, by rubbing them against the surface of the stone, you will by that means easily discern their difference, or their likeness.

The stone adapted to this use, and called from its office the touch-flone, must have the following qualities. It must be of the deepest black, left the tincture of the metal should be altered by spurious rays of light shining among it: it must be capable of being pretty well polished, for when too rough, the colours of the metals rubbed against it cannot be nearly or regularly distinguished; and if it is too smooth, the metals are but faintly, and too slowly abraded or erased by it, especially when gold is tried. It must also be neither too hard nor too soft. Tripoli, coal-dust, and tin-ashes, are used in rubbing off the thin metalline cruts, and in a short time the flone when very hard is apt to acquire too smooth a surface; and when it is too soft it easily wears, throws off a dust, and contracts furrows.

The stone is made in the form of a quadrangular prism, about an inch thick, and two or three inches long.

If the proper stone cannot be procured, moderately smooth pieces of flint are the best substitutes; and the more they approach in colour to the other the better.
The method of using your needles and the stone is this: the piece of gold to be examined, being well cleaned in some convenient part of its surface, a stroke is to be made with it on the stone; and another, close by it, with such of the touch-needles as appear to come the nearest to it in colour. If the colour of both, upon the stone, is exactly the same, it is judged that the given mass is of the same fineness with the needle: if different, another and another needle must be tried, till such a one is found as exactly corresponds to it. To do this readily, practice only can teach.

In making the strokes, both the given piece, and the needle of comparison, are to be rubbed several times backwards and forwards upon the stone, that the marks may be strong and full, not less than a quarter of an inch long, and about a tenth or an eighth of an inch broad: both marks are to be wetted before the examination of them, their colours being thus rendered more distinct. A stroke, which has been drawn some days, is never to be compared with a fresh one, as the colour may have suffered an alteration from the air; the fine atoms, left upon the touch-stone, being much more susceptible of such alterations than the metal in the mass. If the piece is supposed to be superficially heightened by art in its colour, that part of it, which the stroke is designed to be made with, should be previously rubbed on another part of the stone, or rather on a rougher kind of stone than the common touch-stones, that a fresh surface of the metal may be exposed. If it is suspected to be gilt with a thick coat of metal finer than the internal part, it should be raised with a graver, to some depth, that the exterior coat may be broken through: cutting the piece in two is a less certain way of discovering this abuse; the outer coat being frequently drawn along by the fingers, or chisel, so as to cover the divided parts.

The metallic compositions, made to resemble gold in colour, are readily known by means of a drop or two of aqua fortis, which has no effect upon gold, but dissolves or discharges the marks made by all its known imitations. If gold is debauched by an admixture of any considerable quantity of these compositions, aqua fortis will, in this case, also discharge so much of the mark as was made by the bafe metal, and leave only that of the gold, which will now appear discontinued or in specks. Silver and copper are in like manner eaten out from gold on the touch-stone, and hence some judgment may be formed of the fineness of the metal from the proportion of the remaining gold to the vacancies.

Ecker observes, that hard gold appears on the touch-stone less fine than it really is. It may be presumed that this difference does not proceed from the simple hardenss; but from the hardenss being occasioned by an admixture of such metallic bodies, as debase the colour in a greater degree than an equal quantity of the common alloy. Silver and copper are the only metals usually found mixed with gold, whether in bullion or in coins; and the only ones, whose quantity is attempted to be judged of by this method of trial.

The Chinefe are said to be extremely expert in the use of the touch-stone, fo as to distinguish by it the small difference in the fineness as half a touch, or a two hundredth part of the mixt. The touch-stone, says Dr. Lewis, is the only test by which they regulate the value of their gold to the European merchants; and in those countries it is subjeed to fewer difficulties than among us, on account of the uniformity of the alloy, where there is almost always silver; the least appearance of copper being used in the alloy gives a suspicion of fraud. As an alloy of the gold is rarely permitted in that commerce, it behoves the European trader to be well prac-

tified in this way of examination; by carefully attending to the above directions, and by accustoming himself to compare the colours of a good set of touch-needles, it is presumed he will be able to avoid being imposed on, either in the touch itself, or by the abusés laid to be sometimes committed, of covering the bar or ingot with a thick coat of finer metal than the interior part, or of including maffes of base metal within it. A set of needles may be prepared, for this use, with silver alloy, in the series of the Chinefe touches; or the needles of the European account may be easily accommodated to the Chinefe, by means of a table formed for that purpose on the principles already explained. It may be observed, that the gold shotes of China have a depression in the middle, from the shrinking of the metal in its cooling, with a number of circular rings, like those on the balls of the fingers, but larger: Dr. Lewis says, that when any other metallic mass is included within the fraud, is discoverable at sight, by the middle being elevated instead of depressed, and the fides being uneven and knobby; but that the same kind of fraud is sometimes practifed in the gold bars, where it is not discoverable by any external mark. See Cramer’s Art of Assaying, p. 116, &c. Lewis’s Com. of Arts, p. 122, &c. See also Assaying.

TOUCH-Stone, a black, smooth, glossy stone, used to try metals upon.

The ancients called it lapis Lydus, the Lydian stone, from Lydia, a country of Asia Minor, whence it was brought. See Touch-Needles.

TOUCH-Stone, Iris, called bafanum Hibernicum by Molyneux and some others, is a black stone, found in the county of Antrim, in that kingdom, in angular columns, forming that amazing pile called by the vulgar the Giant’s Causeway. See BAFALTES and MARMARO-PROSERA.

The bafaltes being an excellent touch-stone, authors have confounded it with the touch-stone of the ancient Greeks, called by them bafanum, bafanites, lapis Lydus or Heracles, &c. which were, probably, only black jaspers; and they have derived bafanum and bafaltes from the same Greek word, βάσαλτης to try or prove; but the bafaltes was not known to the Greeks, and Pliny expressly tells us, that it is an Ethnic or Egyptian name; whence it is probable that bafaltes is a corruption of the Hebrew word בַּזָּל, basel, which signifies iron, a very proper name for a stone, which they describe to be of the colour and hardines of iron. Many authors affirm, that the touch-stone is a kind of black marble, or that most black marbles may serve for touch-stones: black marbles, it is true, take the colours of metals, and may be used as touch-stones in the ancient manner mentioned by Theophratis and Pliny; i.e. by touching them with needles of different alloys; which manner is still practisfed in Germany and other countries: but in the manner of trying them with aqua fortis, it is ascertained by any calcareous substanacs, as the acid will immediately destroy the substanaces of the stone, and consequently affect and somewhat deface the strokes of the metals. For a good touch-stone, choice should be made of a black stone of the genus of marmaro-proséra, or of the Jasper genus, on which the aqua fortis will only dissolve the copper, silver, &c. without touching the gold, or affecting the stone. The first genus should be preferred, as a nice touch-stone should only have a certain degree of polish, and should be of a compact fine texture, and neither too hard nor too soft; whereas the jaspers are too hard, and do not shew with sufficient exactness the different degrees of alloy; for the touches of the metal give them a higher lustre than their natural polish, and that lustre injures the distinctness of the strokes made upon it. Coiia’s Hist. Fuff. p. 264. See Touch-Needles.
TOUCHWOOD, in Botany, a name given to spunk or agane of the oak, on account of its readily taking fire.

TOU-CHAN, in Geography, a city of China, of the second rank, in Koo-e-techen; 987 miles S.S.W. of Peking. N. lat. 25° 40'. E. long. 105° 3'.—Also, a lake of China, in Chien-tong, 52 miles in circumference; 15 miles S. of Tei-ang.

TOU-CHANG-TAO, a small island near the coast of China. N. lat. 35° 55'. E. long. 121°.

TOUCHE, CLAUDE GUYMONDE DE LA, in Biography, a French poet, was born in 1670, and entered among the Jefuits; but a comedy, acted in 1748, occasioned his alienation from their fraternity. The flight of this body was resented by him in a poetical epiflet published in 1766, and entitled "Les Soupirs du Cloître, ou le Triomphe du Fauconifer," in which he has exhibited the Jefuits in the blackest colours. Upon abandoning their society, he attached himself to the theatre; and in 1757 introduced on the stage his tragedy "Iphigenie en Tauride," the subject of which he borrowed from Euripides. This play, though chargeable with many defects, was well received, and has retained its reputation. Whilst he was preparing another tragedy on the story of Regulus, he fell a victim to a pulmonic disorder in 1762. Among his MSS. was found his "Epître à l'Amicie," which has been read with pleasure. Noui. Dic. Hift.

TOUCHE, in Geography, a town of France, in the department of the Saône and Loire; 7 miles N.W. of Chalon sur Saône.

TOUCHING is sometimes used for the sense of feeling. This sense may be injured by any thing that obstructs the nervous influence, or prevents its being regularly conveyed to the organs of touching, as preffure, extreme cold, &c., also by too great a degree of sensibility, when the nerve is not sufficiently covered with the skin, or there is too great tension, or it is too delicate. Whatever disorders the functions of the brain and nerves, hurts the sense of touching; and as it proceeds from the same general causes, as palsy and apoplexy, it requires nearly the same method of treatment. In a defect of touching, which arises from an obftruction of the cutaneous nerves, the patient must be first purged, and then such medicines as excite the action of the nerves or stimulate the fystmy may be used; for which purpose spirit of hartshorn, fad volatile oliveum, horfe-radifh, &c. may be taken inwardly; and the fufpended parts often rubbed with fresh nettles or spirit of fal ammoniac.

Blistering plasters and fcinapfis applied to the parts will likewise be of use, as also warm bathing, especially in the natural hot baths.

TOUCHING, in Geometry. See TANGENT.

TOUCHING, in Sea Language, denotes the fate of a ship's falls when they first begin to fliver, with their edges in the direction of the wind. It is either occasioned by a sudden alteration of the ship's course, or by a change of the wind, in which it blows more obliquely along the surface of the falls, instead of falling into their cavities from behind, according to its usual direction. Falconer. See FULL-AND-BY.

TOUCHING-AF, denotes the circumstance of stopping, or anchoring occasionally, at some intermediate port, in the course of a voyage.

TOUCHIROA, in Botany, formed by Aublet, out of the Caribbean appellation Moutenbirine, which belongs to an aromatic tree of Guiana. See CRUDA.

TOUQUES, in Geography, a sea-port town of France, in the department of the Calvados, taken by the English in 1427; 6 miles S.W. of Honfleur.

TOUQUES, a river of France, which runs into the sea, about 8 miles N. from the town of Touques.

TOUCY, a town of France, in the department of the Yonne; 12 miles W.S.W. of Auxerre.

TOUFRAGA, a town of Affric Turkey, in Natalia; 26 miles W.S.W. of Boli.

TOUSSONG, a town of Thibet; 92 miles S.S.W. of Laffa. N. lat. 29° 6'. E. long. 90° 42'.

TOUKEY, a town of Hindoostan, in the cirque of Nagore; 20 miles S.W. of Nagore.

TOVET, in Rural Economy, a term used provincially in some districts to signify a measure of half a hufel. It is sometimes written toef in books on agriculture and rural economy.

TOU-FANS, in Geography. See SI-FANS.

TOUGITO-HOTOC, a town of China. N. lat. 44° 40'. E. long. 116° 54'.

TOURING, a town of Croatia; 24 miles S.S.W. of Carlifth.

TOUINCHOSE, a Tartarian standard of China. N. lat. 41° 40'. E. long. 111° 14'.

TOU-JOO, a small island near the W. coast of Sumatra. S. lat. 6° 38'. E. long. 99° 24'.

TOU-LOYEN, a town of Corea; 50 miles N.E. of King-ki-tao.

TOU-KIE, a city of China, of the second rank, in Quang-foo; 1137 miles S.S.W. of Peking. N. lat. 25° 10'. E. long. 106° 49'.

TOUL, a town of France, and principal place of a district, in the department of the Meurthe, on the Moselle, which is a lime bridge, and regularly fortified. Before the revolution it was the principal town of a government, and the seat of a bishop. It was formerly imperial, and the bishop a prince of the empire, and suffragan of Treves. The Toulois, with the town of Toul, and the two bishoprics of Mertz and Verdin, in the year 1552, put themselves under the protection of France; and, in 1648, became a part of that country; 12 miles W. of Nancy. N. lat. 45° 41'. E. long. 5° 59'.

TOULA, a river of Tartary, in that part inhabited by the Kalkas, and called Kalka-pira, which takes its source from E. to W., and is often broader, deeper, and more rapid than the Kerlon, another river of the same country, which runs from W. to E., and discharges itself into the lake Koulon-nor, the waters of which again flow into the river Saghalien by that of Ergone; and the banks of which afford the best pastures in Tartary. The banks of the Toula are covered with woods and beautiful meadows. The mountains which hang over it on the northern side are covered with forests of aged firs, and present to the view a kind of amphitheatere. This river, after receiving the waters of the Selingeu, loses itself in the lake of Paj-cal, which is the largest lake in Tartary, and lies in the territories of the Mufcovites. The Russiains are also masters of the lower part of the Selingeu, where they have built a small city called the Selingeufikoi.

TOULICIA, in Botany, from the Caribbean name of the same plant Toulou. See PONAZA.

TOULOMBA, in Geography, a town and fortress of Hindoostan, in the fubah of Moultan, on the Ravee. This town was taken and plundered by Timur Bec; 50 miles N.E. of Moultan. N. lat. 30° 59'. E. long. 73° 25'.

TOULON, a city and sea-port of France, and capital of the department of the Var, strongly fortified. Before the revolution, it was the seat of a bishop, and, besides the cathedral
cathedral and other parish-churches, contained nine convents, a seminary, and a college. The old and new harbour lie contiguous, and, by means of a canal, communicate with one another, both having an outlet into the spacious outer harbour, which is naturally almost of a circular figure, and very large, being surrounded with hills. The entrance on both sides is defended by a fort, with strong batteries. The new harbour, which is a work of Louis XIV., is well defended by batteries, and round it stands the arsenal, where every man-of-war has its own particular florehouse, but the guns and ordnance are laid up separately. In it are spacious working houses for blacksmiths, joiners, carpenters, lock-smiths, curvers, &c. The rope-house is built wholly of freestone, being 320 toises in length, with three arched walks, in which as many parties of rope-makers may work at the same time. The general magazine here, which supplies whatever may be wanting in the particular florehouses for single ships, contains an immense quantity of all kinds of stores, dispensed in the greatest order and convenience. In the month of August, 1793, the people of Toulon, and the French vice-admiral Tragoff, entered into a negociation with the English admiral lord Hood, who was then cruising in the Mediterranean, and he took possession both of the town and of the shipping, in the name of Louis XV., and, under the express and positive stipulation, that he was to affit in restoring the constitution of 1789. Great expectations were formed on this occasion; and general O'Hara was sent with troops from Gibraltar, being appointed, under the king of England's commission, governor and commander-in-chief: the republicans were not negligent in attempting to recover a place of so much consequence, and soon succeeded. General O'Hara was wounded, and taken prisoner, and the city and port abandoned. On the 19th of December, the town was bombarded from noon till ten o'clock in the evening; when the allies, and part of the inhabitants, having set fire to the town and shipping, precipitated their flight. Two chaloupes, filled with fugitives, were sunk to the bottom by the batteries. The precipitation with which the evacuation was effected, caused a great part of the ships and property to fall into the hands of the French, and was attended with the most melancholy consequences to the wretched inhabitants. Of thirty-one ships of the line, which the English found at Toulon, thirteen were left behind, nine were burned at Toulon, and one at Leghorn, and four lord Hood had previously sent away to the French ports, Brest and Rochefort, with 5000 republican feamen, whom he was afraid to trust; 7½ ports E. of Marseilles. N. lat. 43° 7'. E. long. 6°.

TOULON, a township of New York, near lake Ontario. TOULON en Charolais, a town of France, in the department of the Saône and Loire, near the Arroux river; 16 miles N.W. of Charolles. N. lat. 46° 41'. E. long. 4° 13'.

TOULOUSE, a town of France, and capital of the department of the Upper Garonne, on the Garonne. In the sixth century, it was the capital of the kingdom of the Goths. Before the revolution, it was the capital of Languedoc, fee of an archbishop, and second parliament of France: it is recognized for size next to Paris; the streets are mostly broad, and the houses are built of brick. The number of inhabitants, by a late enumeration, is said to be 50,171. Though so finely situated, its trade is inconsiderable, the principal article being Spanish wool. The university here was founded in 1228. The town-house is a spacious building, and called the capitole, whence the aldermen are termed capitouls; and amongst other curiosities preferred here, are fifteen large parchment folios, delicately written and illuminated, being annals of the city, commencing from the year 1288, and annually continued by the eldest capitoul. These were drawn up originally in Latin, but under Francis 1. were altered to French. The three first volumes are principally filled with the portraits and names of the capitouls, and the following contain all the memorable events and transactions throughout the whole kingdom. Here is also an academy of the sciences and liberal arts. At half an hour's distance below the city, the celebrated canal of Languedoc joins the Garonne, which here becomes navigable. In this city are made carpets, but of little value; together with some light silk and woollen stuffs; 34 ports S.E. of Bourdeaux. N. lat. 43° 35'. E. long. 1° 51'.

TOUM, a town of Syria; 6 miles N.E. of Damascas. TOUMANDI, a town of Aflatic Turkey, in Natolia; 32 miles W. of Kintaja. TOUMANDI Daghi, a mountain of Natolia, part of the ancient Olympus; 20 miles S.E. of Burja. TOUMANUGREE, a town of Hindooftan, in the ancient Kutchwaj; 12 miles S. of Budawar. TOUMEN, a town of Chinefe Tartary; 608 miles E.N.E. of Peking. N. lat. 42° 27'. E. long. 128° 51'.— Also, a river of Corea, which rises lat. 42° 8', long. 127° 34', and runs into the sea of Japan. N. lat. 42° 30'. E. long. 130° 34'.

TOUMET, a Tartarian standard of Chinefe Tartary. N. lat. 41° 7'. E. long. 110° 49'.

TOUN, a town of Peruia, in the province of Khorrassan; 90 miles N.W. of Herat.

TOUNA, or Shiek Abdullab, a small island of Egypt, in lake Menzaheh, where are the ruins of an ancient town; 3 miles W. of Tennis.

TOUNATEA, in Botany, one of the generia name Tounan. See SWARTZIA.

TOUNSE, in Geography, a river of Hindooftan, which rises about 20 miles S.W. of Mahur, in the circuit of Gurrah, and runs into the Ganges, about 20 miles below Allahabad.

TOVOMITA, in Botany, an unenamed name, altered by Aublet, from the Caribbean Fotonite. Juiffien has, we presume, according to his declared intention, afforded it merely a temporary adoption, till the genus is fully understood. With the same view we here admit this name, for the present only.—Juff. Gen. 256. Aubl. Guian. 956. Point in Lamarck's Dict. v. 7. 717. —Clafs and order, Palyandria Monogynia. Nat. Ord. Guttiferes, Juff.

Gen. Ch. Cal. Periathan inferior, of two roundish, concave leaves. Cor. Petals four, rather longer, ovate, acute, concave, equal, inferted into the receptacle of the flower. Stam. Filaments numerous, twenty to twenty-five, inferted into the fame receptacle, erect, linear, shorter than the corolla; anthers of two distinct ovate cells. Pfl. German superior, fefile, ovate, with four furrows; style none; stigma cruciform, in four depressed, rounded lobes. Fruit unknown.


1. T. guianensis. Aubl. t. 364.—The only species, found in the inland forests of Guiana, flowering in September. This is a tree, whose trunk rises to the height of ten feet, and is a foot in diameter, with a branching head. The wood is compact and hard. Bark reddish, exuding drops of a yellow transparent resin. Leaves on the young branches only, opposite, stalked, smooth, three inches long, elliptical, pointed, entire; green above; whitish, with red parallel veins, beneath. Flowers in little terminal three-forked panicules,
TOUP, Jonathan, in Biography, a learned critic, was born at St. Ives, in Cornwall, in the year 1713, and entered at Exeter college, Oxford, where he took a bachelor's degree. After being presented to the rectory of St. Martin, Cornwall, he took the degree of M. A. at Cambridge, in 1756. His "Emendationes in Suidam" introduced him to the learned world: it was published successively in three parts, the first in 1760, the second in 1764, and the third in 1766. The learning of this writer recommended him to the notice and patronage of bishop Warburton, whose positive and contemptuous manner he too much resembles; and for which he received merited censure. In 1769 he published "Epitola Critica ad Virum celeberrimum G.W. Glocet-

TOUP, in Geography, a lake of Thibet, 27 miles in circumference; 10 miles N. of Soue. TOUR, in Geography, a French term, often used among English writers for a journey. Thus we say the tour of Paris, or Rome, &c.

TOUPON, in Geography, a town of France, in the department of the Calvados; 3 miles W.N.W. of Bayeux. TOUR, La, a town of France, in the department of the Puy-de-Dôme; 12 miles W. of Besse. TOUE &c.

TOUPOUR, in Geography, a lake of Thibet, 27 miles in circumference; 10 miles N. of Soue. TOUR, a French term, often used among English writers for a journey. Thus we say the tour of Paris, or Rome, &c.

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The edges of the prism are frequently truncated, and thus form prisms with nine or twelve sides. The primitive form of the crystal, according to Hauy, is an obtuse rhomb. The fracture of tourmaline is perfectly conchoidal; the internal lustre is vitreous. It is harder than hornblende, but softer than quartz; it scratches glass, and is brittle. The principal colours are dark green and brown, but it occurs also red and blue, of various shades and degrees of intensity. It is sometimes nearly opaque, but more frequently translucent or transparent. The crystals of tourmaline possess the peculiar property of being transparent when the light passes perpendicular to the axis of the prism, and opaque when it passes in the direction of the axis. It is always opaque when the height of the prism is less than its breadth. The principal form of the crystal has been before stated; but the most common of the fourteen or fifteen different varieties, is the prism with nine sides terminated by six planes at one end, and by three at the other; or by seven planes at one end, and three at the other. The end which has the smallest number of planes exhibits negative electricity, and that which has the greatest number, positive. This difference in the form of the electric poles is a general law of all crystallized minerals that are electric by heat. Before the blowpipe, the tourmaline melts into a greyish-white porous enamel, but the red Siberian tourmaline is infusible. The constituent parts of tourmaline are given by Vauquelin and Klaproth as under.

According to Vauquelin:

<table>
<thead>
<tr>
<th>Green Tourmaline</th>
<th>Violet Tourmaline</th>
</tr>
</thead>
<tbody>
<tr>
<td>from Brazil</td>
<td>from Siberia</td>
</tr>
<tr>
<td>Silex</td>
<td>40</td>
</tr>
<tr>
<td>Alumine</td>
<td>39</td>
</tr>
<tr>
<td>Soda</td>
<td>40</td>
</tr>
<tr>
<td>Lime</td>
<td>3.84</td>
</tr>
<tr>
<td>Oxyd of iron</td>
<td>12.5</td>
</tr>
<tr>
<td>Oxyd of manganece</td>
<td>2</td>
</tr>
</tbody>
</table>

According to Klaproth:

<table>
<thead>
<tr>
<th>Red Tourmaline</th>
<th>Black Tourmaline</th>
</tr>
</thead>
<tbody>
<tr>
<td>from Rofone</td>
<td>from Berlin</td>
</tr>
<tr>
<td>Silex</td>
<td>43.5</td>
</tr>
<tr>
<td>Alumine</td>
<td>42.25</td>
</tr>
<tr>
<td>Soda</td>
<td>9</td>
</tr>
<tr>
<td>Oxyd of manganece</td>
<td>1.5</td>
</tr>
<tr>
<td>Oxyd of iron</td>
<td>2</td>
</tr>
<tr>
<td>Lime</td>
<td>0.1</td>
</tr>
<tr>
<td>Water</td>
<td>1.25</td>
</tr>
</tbody>
</table>

The tourmaline is a name given, as Dr. Watson has evinced, to the lyncium of the ancients. See Lyncium Lapis.

This stone is very common in several parts of the East Indies, particularly in the island of Ceylon, where it is called tourmaline. Pliny mentions a red or purple stone which attracted light bodies. This is supposed to be the tourmaline. The first account of this stone, that occurs of late years, is in the History of the Royal Academy of Sciences at Paris for 1717, where we are told that M. Lemerex exhibited an uncommon stone brought from Ceylon, which attracted and repelled small light bodies. Linneus, in his Flora Zeylanica, calls this stone lapis electricus, and takes notice of Lemerex's experiments. M. Epsinus, having been informed of the attractive power of the tourmaline by Mr. Lechman, and furnished by him with two stones, made many experiments, the result of which was published in the History of the Academy of Sciences and Belles Lettres at Berlin, for 1756. The substance of his memoir is as follows: the tourmaline has always, at the same time, a positive and a negative electricity; the one of its sides being in one plane, and the other in the opposite; and this does not depend on the external form of the stone. These electricities could excite in the strongest degree by plunging the stone in boiling water.

The proper degree of heat for manifesting the electricity of the tourmaline, is from 100° Fahrenheit to 212°. If we raise the temperature above 212°, it loses its electricity, but regains it in cooling; but if we continue to raise the temperature, we arrive at a point in which the mineral again becomes electric, but has its poles reversed to what they were before. Hauy observed, that we may also change the position of the poles, by heating it unequally in the focus of a lens or mirror. If an electrified tourmaline be broken, the fragments immediately present electric poles, situated in the same direction as that of the large crystal.

If one side of the tourmaline be heated more than the other (as if it had lain upon a hot cake of metal), each of the sides acquires an electricity opposite to that which is natural to it; but if left to itself, it will return to its natural state.

If one of the sides of the tourmaline be rubbed, while the other is in contact with some conductor communicating with the ground; the rubbed side is always positive, and the other negative. If neither side be in contact with a conductor, both become positive. If, in the former of these cases, the tourmaline be rubbed so as to acquire a sensible heat, and the side which is naturally positive be made negative, it will, upon standing to cool, return to its natural state; but if it has acquired no sensible heat, it will not return to its natural state while any kind of electricity remains. If it be heated, even when it is rubbed and insulated (in which case both sides become positive), it will still return to its natural state upon cooling.

The Duc de Nova, who, in 1758, procured two of these stones in Holland, and made a number of experiments with them, an account of which he published, mentions the experiments of M. Epsinus, but does not admit of a plus and minus electricity belonging to the tourmaline when heated. On the contrary, he says that both the sides are electrified plus, but one of them more than the other. The tourmaline was introduced to the notice of the English philosophers by Dr. Hetherden, who procured one (and, indeed, the only one known in England at that time) for Mr. Willson; whole experiments confirmed the opinion of its positive and negative power, advanced by M. Epsinus. Dr. Franklin, likewise, in a letter to Dr. Hetherden, in 1759, informs him of experiments on one of these stones, sufficient for establishing the same theory. About this time Dr. Hetherden procured one of these stones from Holland, and put them into the hands of Mr. Willson and Mr. Cottam, gentlemen particularly conversant with the subject of electricity, and capable of using them with the greatest advantage to this branch of science. Mr. Willson's experiments and observations are very numerous; the result of which was, in the main, the same with that of M. Epsinus, establishing the opinion of the two different powers of this stone; but he differs from him in ascertaining, that when the sides of the tourmaline are unequally heated, it exhibits that species of electricity which is natural to the hotter side; i.e. the tourmaline is plus on both sides, when the plus side is the hottest; and minus on both sides, when the minus side is the hottest. Both these gentlemen repeated their experiments, and each retained his own opinion; but Mr. Willson's apparatus was better calculated for the purpose of accurate experiments than that of M. Epsinus, and he used a greater variety of methods.
methods for communicating heat to his tourmaline. Mr. Wilfon imagined that this stone, as well as glafs, was permeable to the electric fluid, and that the refiftance to its entering the subftance of it was lefs on what he calls the negative than on the positive fide; for rubbing the positive fide of the ftone strongly, he found both fides electrified plus; by rubbing the negative fide in the fame manner, both fides were electrified plus, more strongly than before. Several experiments led Mr. Wilfon to conclude, that the tourmaline refifted the exit and entrance of the electric fluid conliderably lefs than glafs, or even than amber; and he infers, upon the whole, that this ftone differs in nothing from other elec- tric bodies but in acquiring electricity by heat. Mr. Wilfon also conceived, that the tourmaline fuffered the electric fluid to pass through it only in one direction, bearing in this respect fome analogy to the lod-stone, and having as it were two electric poles, which are not eafily destroyed or altered. He also apprehended, that the electric fluid, flowing through all the ftones and gems which re- femble the tourmaline in their electrical properties, moves in that direction in which the grain happens to lie; the refiftance, as he fuppofes, which the fluid meets with, being lefs in that direction than in any other.

Notwithstanding the attention given to this subjeft by M. Åpinus and Mr. Wilfon, the moft important discovery relating to the electricity of the tourmaline was referred for Mr. Canton, who, in a paper read before the Royal Society in December 1759, observes, that the tourmaline emits and aborbs the electric fluid only by the increafe or diminution of its heat; for if the tourmaline, he fays, be placed on a plain piece of heated glafs or metal, fo that one fide of it, by being perpendicular to the surface of the heated body, may be equally heated; it will while heating have the electricity of one of its fides positive, and that of the other negative. This will likewise be the cafe, when it is taken out of boiling water, and fuffered to cool; but the fide which was positive while it was heating, will be negative while it is cooling; and the fide which was negative will be positive. In the Gentleman's Magazine for September 1759, (vol. xxix. p. 424.) he published the reft of fome experiments which he had made on a tourmaline procured from Holland, in a series of propositions, comprising the principal part of what is known on this fubjeft. They are as follow: 1. When the tourmaline is not electrical or attractive, heating it, without friction, will make it fo; and the electricity of one fide of it (diftinguifhed by A) will be positive, and that of the other fide (B) will be negative. 2. The tourmaline not being electrical, will become fo by cooling; but with this difference, that the fide A will be negative, and the fide B positive. 3. If the tourmaline, in a non-electrical flate, be heated, and fuffered to cool again, without either of its fides being touched; A will be positive and B negative, during the whole time of the increafe and decreafe of its heat. 4. Either fide of the tourmaline will be positive by friction, and both may be fo made at the fame time. He fuppofes that, if air be endued with similar properties, or be capable of becoming electrical by the increafe or diminution of its heat (as is probable by attending to its flate before and after a thunder-form), thunder-clouds, both positive and negative, as well as thunder-gulfis, may be easily accounted for. Mr. Canton, with the tour- maline which he received from Dr. Heberden, made other new and curious experiments, firft published by Dr. Prieftley. He put one of them, which was of the common colour, into the flame from a blowpipe, and burnt it white; when he found that its electrical property was entirely destroyed. The electricity of another was only in part destroyed by fire.

He joined two others, made foft by fire, without destroying their electrical property. The virtue of another was improved by being melted at one end; and he found (con- trary to what Mr. Wilfon had obferved of another tour- maline, heated in the fame manner) that one tourmaline re- tained its electrical property, after it had been frequently made red-hot, and in that flate put into cold water. But the moft curious experiment was made on a large irregular tourmaline, about half an inch long, which he cut into three pieces; taking one part from the positive and another from the negative end. Trying these pieces separately, he found the outer fide of the piece cut from the end that was nega- tive when cooling, was likewise negative when cooling; and that the outer fide of that piece which was cut from the end that was positive when cooling, was likewise positive when cooling; the opposite fides of both pieces being, ac- cording to the general law of the electricity of the tour- maline, in a contrary flate. The middle part of the fame ftone was affected as it had been when it was entire; the positive end remaining positive, and the negative end negative.

Dr. Prieftley, about the clofe of the year 1766, directed his attention to the tourmaline: being in pofteffion of Dr. Heberden's large polished one, which weighed one hundred and twenty grains, of an oval form, plane on one fide and convex on the other, and which had paffed through the hands of Mr. Wilfon and Mr. Canton, he purfued his inves- tigation of the properties of this ftone in a variety of experiments. Several of them were undertaken with a view of determining, whether the tourmaline collected its electricity from the neighbouring air; he was led to this conclu- sion from the confideration of Mr. Wicke's experiments on the production of spontaneous electricity, by melting one fubftance within another; and his experiments feem to prove that his conjecture was juft. He also discovered a method of reversing all the experiments made upon the tourmaline, making that fide which is positive in heating or cooling to be negative; and that which is negative to be positive: so that the kind of electricity fhall be juft what the operator fhall direct, by the application of proper fub- ftances to the ftone. Dr. Prieftley not only tried how the tourmaline would be affected by being heated or cooled in contact with various fubftances, to which only one of its fides was expofed at once, but he also made other experiments, in which the ftone was entirely furronded by them. Having covered the ftone to the thickness of about a crown-piece with feeling-wax, he found it to act nearly, if not quite as well, through this coating of wax, as if it had been ex- pofed to the air: hence, if a tourmaline be concealed in a ftick of feeling-wax, the wax feem to have acquired the properties of the tourmaline. See on this article Phil. Trans. vol. li. p. 368, &c. p. 394, &c. vol. liii. p. 436, &c. Franklin's Letters, &c. p. 376. Prieftley's Elec- tricity, vol. i. p. 347, &c. vol. ii. p. 308, &c. 8vo. ed.

The tourmaline, according to Mr. Kirwan, is a fliceous earth, imperfectly united with from 1.05 to 1.47 of its weight of argill, from 0.3 to 0.4 of its weight of mild cal- careous earth, and from 0.15 to 0.243 of its weight of iron. This ftone has been found in Ceylon, Brazil, and the Tyrol: a fpecimen of each has been examined by Mr. Bergman; that of Ceylon is of a dark-brown or yellowwith colour; its specific gravity 3.05 or 3.205: that of Brazil is green, blue, red, or yellow, and its specific gravity 3.07 or 3.18: that of the Tyrol, by re- flected light, is of a blackifh-brown, but by refracted light, yellowish, or in thin pieces, green; its specific gravity 3.05. In fire, none of them deccipitate: but thoie of Ceylon
The red-coloured tourmaline from Siberia is regarded by some mineralogists as a distinct species; it differs from other tourmalines in being infusible: it has been denominated rubellite, (which see.) The indigo-blue variety of tourmaline has been called by Karsten and Dendrada indigolite.

The tourmaline occurs imbedded in gneiss, mica-flate, talcose flate, and talc. It is sometimes found in granite. It is found in rolled pieces in alluvial ground: it was first discovered in the island of Ceylon in the 15th century. It has since been found in various alpine districts of Europe and Asia, in the island of Madagascar, and in North and South America.

The tourmaline may be distinguished from common fchorl by its colour; the latter is always black. The fracture in common fchorl is small-grained and uneven, that of tourmaline conchoidal. The opacity of common fchorl is always greater than that of tourmaline. It differs from common and bafatic hornblende in its fracture, that of the latter being distinctly foliated. The following names have been given to different varieties of tourmaline.

Green tourmaline — Brefilian emerald
Berlin blue — Brefilian fapphir
Indigo-blue — Indicolite
Honey-yellow — Peridot of Ceylon.
Red — Rubellite, fherite, and

TOURNAY, a town of France, in the department of the Pyrenees; 9 miles S.E. of Tarbes.

TOURNE-COUPE-EN-BIGORRE, a town of France, in the department of the Gers; 9 miles S.E. of Lectoure.

TOURNEFORT, Joseph Pitton de, in Biography, the great leader of the French school of botany, of whom we have spoken (see RIVIUS) as one of the three most distinguished systematic writers of the age preceding LINNAEUS, was born of a gentleman’s family at Aix, in Provence, June 5th, 1656. His mother, Ademara Fagoué, was of a Parifian family, likewifc, in the French fcent, noble. Being defined by his parents for the church, he was educated at the Jesuits’ college of his native town; but he soon imbibed a taffe for natural knowledge, which led him at the age of 21, on the death of his father, to change his original defination, for the profeflion of phyfic. This latter indeed was but infubfervent to a moft ardent devotion for botanic science, which ever after made the object and the happiness of his life. Not that his education, in other refpects, was neglected; for he proved a good fcholar, well grounded in the studies necefary to his medical profeflion, particularly anatomy and chemistry, and no lefs verfed in historical and critical knowledge; infomuch that he became an elegant writer and lecturer, as happy in his powers of communicating, as of acquiring, information. His per- fonal character, manners, and addresses were alfo such as to prove a general recommendation in his favour through life.

Having soon exhausted the botanical riches of a phyfic-garden at Aix, and of the circumjacent fields, he extended his researches to the neighbouring Alps, and afterwards to the Pyrenees, where his hardy frame of body, and his ob- serving enterprising mind, rendered easy to him the acquisi- tion of the principal vegetable flores of those romantic and fertile regions. Even the thievifh and lawlefs hordes, which fo often infet the borders of kingdoms, and which then abounded in the Pyrenean fastnesses, were fearcly formidable to a traveller, whose only riches were dried plants, and whose onlyfible provifion for his journey con- fisted of a little black bread, in which he concealed his money. The intermediate winters between his feveral visits to Dauphiny, Savoy, Catalonia, the Pyrenees, &c.
were spent in the university of Montpellier, where he first entered in 1679; but he is said to have taken his doctor's degree at Orange. At Montpellier he enjoyed the intimacy of the excellent Magnol, of whom we have given an account in his proper place, and to whom the long-established botanical fame of that university is chiefly owing. Yet this able man narrowly escaped being hunted from his seat; as his holy name evinced successor, professor Decandolle, has lately, in 1876, been, because he was a Protestant; nor could the appointment of his king peremptorily the latter from that king's worst enemies. Tournefort was in no danger of this kind. He was nevertheless a liberal Catholic, whose subsequent am NSDataions on the depraved superstitions that occurred in his travels, prove him to have been by no means the slave of any church or priesthood.

The merits of Tournefort, as a botanist, soon became conspicuous at Paris, and, aided by a fortunate introduction, procured him the especial favour of professor Fagon, then chief physician to the queen, (see Fagónia,) who resigned in his favor the superintendence of the royal garden. In this school he was soon attended by a numerous throng of students, eager to follow him in his herborizations round Paris, and to profit by his practical remarks. We have already, in our account of William Sherard, mentioned that illustrious botanist as among his affidious pupils. The subject of our memoir now became desirous of further examining the productions of other countries than his own, in their native situations. For this purpose he travelled in 1688 to Spain and Portugal, afterwards into Holland and England; enriching by these means his own collection of dried plants, as well as the living collections of the Parisian garden, and procuring the acquaintance and correspondence of all the most eminent cultivators of the science in which he excelled. Hence the great herbarium of Sherard became supplied with all Tournefort's acquisitions, not only at that time, but after his subsequent voyage to the East, the fruits of which were transmitted to England with more particular care and exactness, than perhaps to any other country, as appears by what are still preserved at Oxford. The studies and labours of Tournefort were facilitated and encouraged by a royal pension, which could certainly not come under the opprobrious denomination of a sinecure. In 1692 he became a member of the Academy of Sciences, and in 1694 published in French his Elements de Botanique, making three octavo volumes, dedicated to Louis XIV.—This was but a prelude to his immortal work, the Institutiones Rei Herbariae, of which the first edition, in three quarto volumes, with 476 plates, appeared in 1700. The second, which, with a reference to the "Elements," is called the third, was published by Anthony de Jussieu, at Lyons, in 1719, with the Corollarium, composed of the author's Oriental discoveries. In 1698, when he was admitted a member of the Medical Faculty at Paris, he published a little duo-decimo volume, Histoire des Plantes qui naissent aux Environs de Paris, afterwards translated by professor Martyn into English. The reputed virtues of the plants are subjoined to their synonyms and descriptions. The arrangement is alphabetical, the style defuljory, nor is this one of the best books of its kind.

We know not at what period Tournefort received the order of St. Michael, but that he was decorated therewith appears by his portrait, published by Dr. Thornton, from an original picture; and the circulation is alluded to by Haller, Bibl. Bot. v. 2. 3.

At the earnest recommendation of his friend Fagon, Tournefort was dispatched, under royal patronage, on a voyage to the Levant, the avowed object of which was to investigate the plants of ancient writers, as well as to make new discoveries. He was accompanied by a German physician, named Andrew Gundelfscheimer, (see Gundelia,) and by Claude Aubriet, one of the most exquisite botanical painters that the world ever saw. These travellers left Paris on the 9th of March, 1700, and embarking at Marfelles the 23rd of April, anchored nine days afterwards in Crete. The investigation of the Archipelago, Greece, the shores of the Euxine, the countries of Bithynia, Cappadocia, Iberia, Armenia, Georgia, Galatia, Lydia, &c. occupied two years, and our adventurers returned in safety to Marfelles, on the 3d of June, 1702. Tournefort's account of this expedition, written in French, and published soon after his decease, is one of the most agreeable, intelligent, and valuable books of travels extant. De Thésys justly refutes the cenfure of the Abbé Sellami, that it is written with the furia francese, or rage for every thing French. To the mode of its composition indeed something may be objected. The work is addressed, in the form of letters, to the comte de Pontchartrain, secretary of state, &c. &c.; and as the etiquette of the French court required that so illustrious a personage should of course be endowed with all human erudition and knowledge, the writer is obliged to treat him accordingly. We are therefore told nothing without the impertinence of "vous favez Monseigneur!" except perhaps the harmless description of a new plant, in writing which the author's love of science made him flip, for a moment, the collar of patronage. The reader indeed soon forgets every thing but the delightful company of the narrator, who takes us along with him to every spot; details with equal intelligence the manners, dress, and information of the people he visits; or carries us into the profoundest researches of ancient history and geography; tracing the fate of empires, countries, and cities, with the same grace and facility with which he makes us enamoured with a new plant, or exposes the impositions or the ignorance of emperors of the soul or body. This work is illustrated with a very large number of plates, of which the botanical ones are particularly excellent. We have a good English edition, and Haller mentions one in Dutch. The curious grotto of Antiparos afforded the author an opportunity of detailing his favourite theory of the vegetation of stones, which is now refuted by more accurate chemical enquiries. (See Stones.) His travels were to have extended into Africa, but the plague raging in Egypt, he returned home directly from Smyrna. On arriving at Paris, it was his design to have turned to advantage the connections and reputation he had acquired, by devoting himself to the practice of physic. But whatever prospect he might formerly have had of successes in this line, was defeated by his long absence; nor did the duties of his botanical appointments leave him sufficient leisure to court or to pursue his more lucrative profession. His time however was incessantly occupied; and the preparation of his Voyage du Levant for publication, which, confederating the books necessary to be consulted, was not light or speedy task, led him too often to encroach on the night, after the superabundant labours of the day. His health became impaired, but this could not relax his ardour. His fate however was precipitated by the accident of a carriage in the street, which crushed his breast, and even threatened him with instant death, from which he was rescued by the exertions of a friend near at hand. He languished for a few months only after this event, and died December 28, 1708, in the fifty-third year of his age. We find no mention of his place of burial, nor of any monument erected to his memory. He was never married. He left his collection of plants to the king, who bestowed a pension of a thousand
thousand livres on his nephew, as an avowed return for this legacy, and a testimony of royal esteem for the deceased. The first volume only of his *Voyage* was printed at the time of its author's death. A second edition appeared at Amsterdam in 1718, to which are prefixed the *Éloge de Tournefort*, delivered by Fontenelle to the Academy of Sciences, April 10, 1709; and a more ample composition of the same kind by Lauthier, in a letter to M. Bégon, the patron of Plumer, and the friend of Tournefort. This last account, in particular, is written with the affektion and respect of a person intimately acquainted with the private character, as well as public merits, of the subject of his narrative. Tournefort is described by him as of the most simple though engaging manners, devoid alike of ostentation and of jealousy, as amiable and exemplary in private life, as he was zealous and exact to fulfill his public duties. Besides his knowledge of Latin and Greek, he was versed in the Italian and Spanish languages. The abundant riches of his mind were readily communicated, with clearness and facility, but without parade, in his conversation as well as in his lectures.

Of the principal works of this eminent man, we have already spoken; and it chiefly remains for us to offer some remarks upon his merits as a systematic botanist. He is said to have left several works in manuscript. One of these was entitled *Topographie Botanique*, containing the precise places of growth of the plants collected by himself in the south of France, as well as in Spain and Portugal, between the years 1676 and 1690. He also composed an universal critical history of plants, in alphabetical order, under the title of *Plantarum Adversaria*, in which the remarks of preceding writers were collected and compared, and his own opinions subjoined. The *Schola Botanica* a catalogue of the Paris garden, we have already mentioned in the biographical article of William Sherard. M. Lauthier removes all doubt respecting the real author of that little volume, by informing us he had seen a copy, with manuscript additions and corrections in Tournefort's own hand, where Sherard was named as the writer of the book.

Tournefort was led, by the philosophy of his time, to search for the medical qualities of plants by a chemical analysis. On this subject he is recorded to have left a volume of manuscripts. That it has never been published is no loss to the world; the work of Geoffroy, undertaken, and laboriously accomplished, with the same view, having proved that no real knowledge is to be acquired by this means, and having therefore put the question for ever at rest. Our readers will find the principles of Tournefort's system of botanical arrangement, under the article *Classification*. According to this, his *Institutiones Rerum Herbarum* are divided; and the same subject was adopted by several compilers of local *Floras*, or of garden Catalogues, in the early part of the eighteenth century. Even Linnaeus's earliest work, entitled *Sphaera Botanica*, five *Planta Rariores Qua Smolandiac, Scandian et Refugianae observata et enumerates*, the unpublished manuscript of which, dated Upfal, 1729, and illustrated with drawings, is now before us, is clasped after Tournefort's method. Nor did any great difficulties attend the application of that method to any tribes of plants with which its author had been conversant. But when the productions of new continents came to be examined, it necessarily fell short; as we have remarked in the biographical article of Dr. Alexander Garden. No system of botanical classification, except the artificial sexual one of Linnaeus, has ever proved universally applicable to the vegetables of all countries, because no other depends on parts essential to the very being of every plant.

Tournefort's method, however, by its apparent facility, the elegance of the parts on which it chiefly rested, and its great conformity, in many respects, to the evident order of nature, though in others it as remarkably infringes on that order; became, by all these attractions, very popular. If the more abstruse and philosophical principles of Cæcilius, Ray, Hermann, &c. educated founder theoretical botanists; the method of Tournefort made a great number of practical ones. Yet it is not upon his system of classification that the fame of this great naturalist depends. His discrimination of the genera of plants must alone immortalize his memory. His labours in this department of the science are the principal foundation of all that has been done since his time, and of all that can ever be attempted in future. If he did not, like Linnaeus, invent a clear mode of defining each genus by words, no one can deny that he had a most comprehensive, and, for the chief part, distinct idea of the whole subject. He has caused each genus to be figured in a able manner, that his exquisitely plates supply, as much as possible, all verbal deficiencies. Haller indeed complains, not unjustly, that Tournefort's figures are more instructive than his definitions, as exhibiting characters respecting the flanes, styles, and other parts of flowers, which, though affording the best generic distinctions, are not taken into his descriptions. Such defects seem to have arisen from his disapprobation, bordering on contempt, of the doctrine of the lex of plants. He thought the authors served merely to discharge an extraordinary matter, or to separate iniquities from the eminence; though it could not escape him that these two parts were often very distant from each other; and he was therefore not much satisfied with his own hypothesis. Such dissatisfaction would naturally lead him further from dwelling with pleasure on the parts in question, for any purposes of arrangement. He rather delighted to perfect in the disgraceful blunder of the old authors, who spoke of the male and female plants of Nettle, Mercury, Hemp, &c., as distinct species, and called the female the male, because of the form of the seed-vessel. It is indeed one of the most remarkable facts in the philosophy of botany, if it may here deserve to be honoured with an appellation, that when the most ancient writers, as well as their early followers among the moderns, distinguished plants by the names of male and female, they meant to designate them in general, as different species. Tournefort, from inadvertency falsely, followed them in this error, as well as in every other, relating to the species of plants. To that subject he never gave any philosophical attention. The plan of his work was to dispose all the known plants, under genera, whose leading principles of distinction were, with some exceptions, taken from the fructification. This great undertaking he accomplished in a masterly manner, as well as the arrangement of these genera, according to a philosophical system. But he was content to collect under each genus all the reputed species of Calypso Bœhn and others, judging of their generic character only, and not taking into the leaf consideration their specific differences. Hence double flowers, varieties of colour, flavour, &c. stand as species in Tournefort's *Institutiones*. It is unfair to blame him for imperfections in what he never undertook to amend; but if genuine specific distinctions be, as Linnaeus declared, the perfection of botanical science, as they are, in fact, the only permanent and indisputable ground of the whole; we cannot claim for Tournefort the highest rank as a practical botanical philosopher. That he was deeply and learnedly versed in the theory of the science, appears from all parts of his writings, and from none more than his masterly *Syngoge in Rerum Herbariwm*, where the subject is treated historically as well as systematically. Whatever this illustrious botanist has done, or whatever he has...
left undone, he is the father of the French school of botany, and the traces of his principles, either confirmed, improved, or superseded by the labours of other teachers, are conspicuous in the works of his distinguished followers Vaillant, Lamarck, and the Jullieux. With the feelings of the first of these, as Vaillant could not but be sensible that, in some important points, he had the advantage of his great predecessor, somewhat of conscious superioriety, not inconsistent with jealousy, was often intermixed, and too often betrayed. But the others, living at too remote a period from their idol to consider him otherwise than as the glory of their country, have made him ample amends in identifying his fame with that of France itself. The most valuable improvements, not only in classification, but in nomenclature, were, for a long time, not permitted to encroach even on thenegligences or errors of Tournefort. The national spirit of the French still renders this illiberal principle sanctified. The homage long given to Tournefort is now transferred to Jullieux. The term of *læve-nature* is applied to the Linnaean system, as if his own were entirely a natural one, and as if what the great Swedish botanist modestly called fragments of a natural scheme of arrangement, were not, in fact, the basis of the best part of Jullieux's. The mischief of these exclusive partialities is, that the really valuable improvements in science, which originate in other schools, are too much neglected by the pupils of the Parian one. In clear discrimination, and concise definition, in lucid order, elegant and classical terminology and nomenclature, in judicious combination, as opposed to faidious and indiscriminate dilution, they generally, and sometimes very remarkably, fail. If any of them should design to peruse this criticism, may they disarm it by correcting the imperfections to which it alludes! Rivalship in science or philosophy ought only to lead to mutual improvement; for he who will learn nothing from an adversary, does but render apparent one inextricable cause of his own imperfections. Tournefort's Works. Hall. Bibl. Bot. S.

TOURNEFORTIA, in Botany, bears that name in commemoration of the great French botanist, of whom we have given an account in the preceding article. This genus, founded by Plumier, was called by him *Pittonia*, after the family name of the person commemorated. Linnaeus altered it, according to his own rule, of retaining the appellation by which that person was most known. So he preferred *Hippocratea* to the Coa of Plumier, and *Theophrastia* to his *Erythea*. French writers have subsequently acceded to this decision.—Linn. Gen. 78. Schreb. 104. Willd. Sp. Pl. v. 1. 791. Mart. Mill. Dicht. v. 4. Ait. Hort. Kew. v. 1. 303. Brown Prod. Nov. Holl. v. 1. 496. Jull. 129. Lamarck Illust. t. 95. Poiret in Lam. Dict. v. 5. 355. Gärtn. t. 76. (Pittonia; Plum. Gen. 5. t. 3.) —Clas and order, *Pentandra Monogyna*. Nat. Ord. *Asterifolii*. Linn. *Borrageae*, Jull.

Gen. Ch. Cal. Perianth inferior, of one leaf, small, in five deep, awl-shaped, persistent segments. *Cor.* of one petal, funnel-shaped; tube cylindrical, globose at the bottom; limb spreading, divided half way down into five pointed, horizontal segments. *Stam.* Filaments five, awl-shaped, in the throat of the corolla; anthers simple, within the orifice of the tube, converging, pointed. *Pil.* Germen superior, globose; style simple, the length of the stamens, club-shaped; stigma bare, umbonate. *Peric.* Berry globose, of two cells, perforated by two pores at the summit. *Seeds* four, nearly ovate, lepaped by pulp.


TOU

A tropical genus of erect or twining shrubs, with simple, undivided, alternate, rough, hairy, or silky, rarely smooth, leaves. The flowers are numerous, mostly white or bluish, in dense, recurved, unilateral, often cymose, spikes, without bracteas. Berries white, bluish or black. In habit, this genus comes nearest to *Heliotropium*. *Messerchmidia* is united to it by Mr. Brown. (See those articles.) In the true *Tournefortia*, according to that learned botanist, the berry has only two seeds, or nuts, each with two cells. To these belong the *Messerchmide* and *Heliotropium gaephalodes* of Linnaeus. In *T. hisrtissiflora*, the berry has four simple, or single-kerneled, seeds, and a straight embryo. In *T. volubilis* of Linnaeus, and *scander* of Solander, to which we may add *serica* of Vahl, the segments of the corolla are awl-shaped, the berry with four simple seeds, of which two or three are often abortive, and a curved embryo. Mr. Brown would separate all these from *Tournefortia*, but whether the *hisrtissiflora* should form a distinct genus from the species with awl-shaped segments of the corolla, he is doubtful. A confederation of the genera *Onagia* and *Ceratke*, to say nothing of others of this same order, makes us doubt if the number of parts, or cells, in the fruit, or rather the greater or less union of those parts, can here make a general distinction. We submit it to the re-consideration of our learned friend; and in the meanwhile we shall attempt a display of all the species of *Tournefortia*, of which Linnaeus and Willdenow have given but a very incomplete list. Poiret in Lamarck's Dict. has added several to the number, but we polishes some, even from Commerson's collection, which are not to be referred to any of his. Some of the described ones have not come under our inspection, and the history of others is much confused, but we hope to leave the subject, if not fully elucidated, at least in a clearer state than we find it.—*T. bunida*, Linn. Sp. Pl. 202, belongs, according to Mr. Brown, to *Heliotropium*. See that article.

1. *T. ferrata*. Greater Serrated Tournefortia. Linn. Sp. Pl. 201. Willd. n. 1. (Pittonia arborescens, chamadricolia major; Plum. l. 224. t. 228 f. 1.) Varronia mirabiloides; Poiret in Lam. Dict. v. 4. 262.)—Leaves ovate, serrated, on pinnate footstalks. Spikes recurved, on axillary stalks, longer than the leaves.—Native of the West Indies, where it was found by Plumier, from whose figure alone it is known to us. The flower is said to be arbo-rectile, with round zigzag branches. Leaves about two inches long, strongly serrated, on stalks nearly an inch in length, each with a joint about the middle, where the stalks seem finally to separate, the lower part hardening into a spine. Flowers: stalks axillary, solitary, each bearing three recurved spikes, of numerous, large self flowers, the limb of whole corolla is undulated, an inch in diameter. Berry the size of a pea, globose, undivided. Poiret says it is red. If his plant from Hispaniola be the same, this species must be removed to *Varronia*, which is rendered probable by the aspect of its corolla.

2. *T. chamadricolia*. Lesser Serrated Tournefortia. (T. ferrata var.; Linn. Sp. Pl. 201. Willd. n. 1. Pittonia arborescens, chamadricolia minor; Plum. l. 224. t. 228 f. 2.)—Leaves oblong, serrated, on recurved pinnate footstalks. Spikes capital, terminal.—For this also our only authority is Plumier, who gathered it in some part of the West Indies. It appears to differ essentially from the former, in the characters above given, as well as its much smaller size. The flowers however are nearly as large, but much fewer, with partial stalks, which become very conspicuous as the fruit ripens. Their corolla is represented very regularly crenate, rather than undulated, but indicates a *Varronia*, as well as that of the foregoing.

3. *T.*
3. *T. hirsutiflora.* Hairy Tournefortia. Linn. Sp. Pl. 201. Willd. n. 2. Poiret n. 1. Swartz Obs. 56. (Pittonia hirsutiflora et lamosiflora, baccis albis; Plum. Ic. 226. t. 228. Heliotropi flore, brutex baccifer racemosi, folio rugoso footi maximo subrotundo hirsuto, fructu albo; Sloane Jam. v. 2. 108. t. 212. f. 1.)—Native of bushy places in Jamaica, and other West Indian islands, as well as of Mexico, from whence it was sent by Mutis to Linnaeus. This is a *frub*, three or four feet high, somewhat twining, its branches, filals, foliage, and calyx clothed with rufly down. The *corolla* is still more densely covered externally with silky hairs. *Leaves* foetid, filaked, elliptical, entire, pointed at each end, tranfversely ribbed, three inches long, and an inch and half broad; molt hairy, and rather filaky, at the back. *Spikes* aggregate, on long, hairy, axillary and terminal filals, about the ends of the branches. *Flowers*, as well as *berries*, white; the latter rough and hairy, Swartz fays of two cells, with two *seeds* in each, which does not agree with Mr. Brown’s account, given above.

4. *T. multiflora.* Tobacco-leaved Tournefortia. Linn. Sp. Pl. 201. Willd. n. 5. Ait. n. 2. Swartz Obs. 58. (Pittonia racemosa, nicotiana folis, faticiflora; Plum. Ic. 226. t. 230.)—Leaves ovato-lanceolate, rough; downy and pearly beneath. *Flower-flanks* branched. *Spikes* pendulous. *Calyx* shorter than the *style*.—Native of Jamaica. Dr. Wright. The *leaves* vary in size; but are not unlike thole of *T. hirsutiflora* in shape. Their upper surface is more minutely rough than in that species, and their under one more softly and densely downy. The *spikes* are very remarkable for their extremely long linear form, and pendulous position. They measure frequently eight or ten inches, and are from six to eight on each axillary forked filal. The *flowers* are small, fepulchre, in a fimple unilateral line. *Calyx* hairy, with lanceolate upright figures. *Tubes* of the *corolla* hairy upwards, about thrice as long as the *calyx*; its limb in five ovate, obtuse, keeled, refexed figures. *Style* projecting beyond the permanent *calyx*, after the *corolla* is fallen, with a very large pulley-shaped pointed /hifma/. This is united, by Lamarck and Poiret, to the following, under the name of *macrophylla*; Poiret n. 2.

5. *T. cymofo.* Drooping Cymofo Tournefortia. Linn. Sp. Pl. 202. Willd. n. 8. Ait. n. 4. Jacq. Coll. v. 1. 96. Ic. Rar. t. 31. (Heliotropi flore, brutex, folio maximo oblongo acuminate glabo; Sloane Jam. v. 2. 109. t. 212. f. 2.)—Leaves elliptic-lanceolate, pointed, smooth. *Flower-flanks* much branched. Spikes drooping. *Calyx* as long as the *style*.—Native of the Weft Indies. This is certainly, as Linnaeus observes, nearly related to the foregoing, but differs in the smoothness, and more elongated points, of the *leaves*, as well as in its more numerous, shorter, and less definitely pendulous, *spikes*. The *flowers* are similar, but the *style* in our fpecimens does not project beyond the *calyx*. The *corolla*, at first white, turns tawny, and dark red, before it falls. *Berry* the size of a small pea, white, with black dots.

6. *T. fringeloida.* Lilac-leaved Tournefortia. Vahl. Symb. v. 3. 23. Willd. n. 4. Poiret n. 17. —Leaves ovate, somewhat heart-shaped, pointed, smooth. *Spikes* terminal, divaricatet, hairy, as well as the *filals*.—Native of Cayenne, and, if we mistake not, of Jamaica, where our fpecimen, precifely anfwering to Vahl’s description, was gathered by Dr. Wright. The *young branches*, as well as the *flower-flanks*, the main rib of the *leaves* on both fides, and the tranverse ribs underneath, are all more or less hairy, like the *flower-flanks*, *spikes*, *calyx*, and outside of the *corolla*. *Leaves* two inches long, deftitute of fine intermediaf veins, quite smooth, except the ribs. *Flower-flalk terminal, erect, forked, with spreading *spikes* above an inch long. *Flowers* alternate. Segments of the *corolla* with long taper points.

7. *T. bicolor.* Pale-backed Tournefortia. Swartz Ind. Occ. v. 1. 344. Willd. n. 7. (T. levigata; Poiret n. 37.)—Leaves elliptical, pointed, smooth; slightly rufky on the upper side. *Spikes* terminal, cymofo, crowded, erect, recurved, somewhat hairy.—Native of bushy places in Jamaica. A *frub* fix feet high, with smooth branches. *Leaves* three or four inches long, elliptical rather than ovate, acute at each end, finely reticulated with veins between the ribs, occasionally minutely hairy, as well as the branches and *foot-flanks*; pelar beneath. *Flower-flanks* several, terminal, alternate, rather hairy, erect, each bearing fix or eight sub-divided, cymofo, dense *spikes*. Segments of the *calyx* ovate, scarcely hairy, except when the leaves are fo. *Corolla* greenish-white, externally covered with fily hairs. *T. glabra*, Linn. Sp. Pl. cd. 1. 141, is perhaps a variety of this.


10. *T. farnentofo.* Trailing Tournefortia. Poiret n. 5.—“Leaves ovato-oblong, acute. *Spikes* branched, very short, two-ranked. Stem twining.”—Native of the Mauritius. Sonnerat. A fpecimen gathered by Commerfon in the Philippine iflands, anfwers very nearly to the following defcription of Poiret. The *flams* are climbing, with long, diant, trailing *shoots*, flirated, nearly cylindrical, clothed with short whitifh hairs. *Leaves* alternate; downy, and whitifh bencath, especially when young; rounded and di- lated at the base; almost smooth on the upper surface; three or four inches long, and an inch and half wide. *Foot-flanks* short, very downy. *Flowers* terminal, in short, close, branched, downy *spikes*, and difpofed in two rows, felfife. *Calyx* short, with blunt segments.

11. *T. braflinfis.* Braflial Tournefortia. Poiret n. 6.—“Leaves ovato-lanceolate, harfh, somewhat finuated; whitifh beneath. Stem round, acutely flirated.”—Sent to Lamarek from Braflial. Allied to the laft, but the *leaves* are of a different shape, and the whole plant nearly deftitute of pubfeence. *Leaves* two or three inches long, an inch or more in breadth, confracted at their base, harfh on both fides, whitifh and downy beneath when young. *Flowers* in short, refexed, downy, hoary, branched *spikes*, compofing a terminal *cyme*. Segments of the *calyx* downy, very acute, flightly recurved. Poiret.

12. *T. arboreofen*. Arboreofen Tournefortia. Poiret n. 7.—“Leaves ovato-lanceolate; somewhat downy when young. *Spikes* branched, very short. Stem arboreofen.”—Gathered by Sonnerat, in the East Indies. *Branches* woody, angular, rough and rugged, particularly the young *shoots*. *Leaves* ovato-lanceolate, confracted at each end, veiny, ribbed, harfh, four or five inches long, an inch and half broad; white and downy beneath when young. We have nothing
TOURENFORTIA.

anwering to this description, nor is the specific character such as to afford much affinity in determining the plant.

13. **T. velutina.** Velvet-leaved Tournefortia. — Leaves elliptic-lanceolate, acute, silky on both sides. Spikes dense, aggregate, cymose, from the forks of the branches, silky. Stigma slightly two-lobed. — Gathered by *Collonson* in mountainous woods of the isle of Bourbon. The branches, *flasks*, *leaves*, *calyx* and *corolla* are entirely clothed with fine silky pubescence, the glabose base, and obtuse limb of the latter, on its upper side, being the only smooth parts, except the *berries*, which are snow-white. The *leaves* are four or five inches long, somewhat undulated, various in breadth. We have from the Mauritius what may possibly be a variety, with very narrow, and nearly smooth, *leaves*. Its *inflorescence* betrays no difference.

14. **T. argentea.** Blunt-leaved Silver Tournefortia. *Linn. Suppl. 133. Willd. n. 9. Poiret n. 8. Brown n. 2.* *(Buglossium lanuginosum;* Rumph. Amboin. v. 4. 119. t. 55.) — Leaves obovate, bluntish, silky on both sides. Spikes in repeatedly compound cymes. Tube of the corolla very short. — Native of the sea-coast, in Ceylon, Amboyna, Banda, and other parts of the East Indies. This *flora* is hardly so tall as a man; its main stem very short, the bark full of deep fissures; the branches widely spreading, hairy. *Leaves* crowded about the ends of the branches, alternate, stalked, about three inches long, entire; tapering at the base; rather flabby, beautifully clothed all over with the finest silky pubescence, which appears to vary in degree, and in one of our specimens, from the isle of Bourbon, excels in splendour every plant of our acquaintance. The *flowers*, *flasks*, longer than the leaves, are at first terminal, but the branch is soon protruded at each side beyond them. They are subdivided into tufts of dense recurved *spikes*, above an inch in length. All the *flasks*, like the broad oblate *calyx*, are silky. *Corolla* white, with a short tube, and a recurved limb, altogether not extending beyond the calyx. Mr. Brown describes the *ligula* as fleshy and two-lobed. Rumphius says the *leaves* are eatable, and much esteemed in Amboyna for their saltish flavour.

15. **T. gnaphaloides.** Cud-weed Tournefortia. See Brown 496. *(Hedcotropium gnaphaloides;* Linn. Sp. Pl. 188. Willd. Pl. Pl. v. 1. 745. H. gnaphaloides litoreum frutescens americana;* Phip. Phys. v. 183. f. 5.) — Leaves linear, obtuse, densely downy on both sides. Spikes dense, downy, recurved, on cymose *flanks*. — Native of the sea-coast in the West Indies. We follow Mr. Brown in removing to the present genus this elegant *flora*, whose snow-white downy covering is rather more cotonny than silky, and yet partakes of the silvery beauty of the leaf described. The *leaves* are crowded, thick, about two or three inches long, and hardly a quarter of an inch wide. *Flowers* small, white, in short, thick, woolly, solitary, twin, recurved *spikes*. *Berries* smooth, the size of a currant.

16. **T. suffruticoso.** Hoary-leaved Tournefortia. *Linn. Sp. Pl. 272. Willd. n. 11. Ait. n. 5.* *(T. subfruticosa, folium frutex an oblongis, fronde composita;* Browne Jam. 170, excluding the fynonym of Sloane, which belongs to *Suriana maritima. T. incana;* Poiret n. 92. Lamark Illutr. n. 1880. t. 95. f. 3.) — Leaves nearly lanceolate, hoary. Stem somewhat hairy. — Native of Jamaica, by the sea-fide, near the porch of St. James's. Seldom rides above three or four feet from the ground. *Brown*. This is a very uncertain species, for which Dr. Browne seems the only authority, nor is there any specimen to represent it in the Linnaean herbarium. The *Tymnete satue fruteti, Sloane Jam. v. 2. 291. t. 106. f. 4,* is certainly *Suriana maritima*, for which it was subsequently quoted by Linnaeus. Conferently Wildedenow cites it under both. It is sufficient to read Sloane, to see that his plant can be no *Tournefortia*. Possibly it may, nevertheless, have been what Browne intended. If so, the plant of Lamarck and Poiret has nothing to do with it, and may perhaps be the *fruits* of Vahl, hereafter described. Miller is recorded as having cultivated the *T. suffruticoso*, whence it has found a place in Mr. Aiton's work, but apparently without being known at the present day.

17. **T. volubilis.** Climbing Rough Tournefortia. *Linn. Sp. Pl. 201. Willd. n. 3. Ait. n. 1. Poiret n. 10. Lamark Illutr. n. 1884. t. 95. f. 2.* *(Bryonia nigra fruticosa, racemi ramulis varii implicitis, acutae, angustissimi inflar in fe contortis, baccis albis una vel altera nigra maculata;* Sloane Jam. v. 1. 234. t. 143. f. 2.) — Virga aurea americana frutecens glabra, foliis subtris catatis, &c.; *Phil. Phyto. t. 235. f. 6.*) — Leaves deflexed, ovate, acute, rough with minute points on both sides. Stem twining. Segments of the corolla awl-shaped. — Native of South America and the West Indies. It flowered with Linnaeus in the Upal garden, and is preserved occasionally in our English flowers. Sloane says the *trunk* near the ground is as thick as one's arm, twining round any thing it comes near, rising to the height of seven or eight feet. The *branches* are slender, round, somewhat zigzag, repeatedly subdivided, minutely downy, or rather silky, with close-preffed hairs. *Leaves* scatterd, an inch or inch and half long, on slender, downy, deflexed *flasks*, about half an inch in length, fingle-ribbed, entire, flat and even, clothed on both sides with very minute, white, callous prickles, but no hairines. *Flowers* numerous, small, greenish, in lateral, or somewhat terminal, slender, divaricated, downy, cymose *panicles* of lax spikes, or rather *cliffers*. *Calyx* in five deep, hairy, narrow segments. Tube of the *corolla* silky, hardly thrice the length of the *calyx*; limb in five narrow, awl-shaped, spreading segments, above half the length of the tube. *Style* slender, with a large long-beaked *ligula*. *Berry* half the size of a pea, glabrous, often two-lobed, white, with black dots.

18. **T. leucogaster.** Climbing Smooth Tournefortia. — Leaves spreading, ovate, acute; smooth above; rough with minute points beneath. Stem twining. Segments of the corolla awl-shaped. — Native of Jamaica. *Dr. Wright*. This has altogether the habit of the *calyx*, of which it may possibly be a variety. The chief difference discoverable in the dried specimens is the upper surface of the *leaves* being perfectly delitute of the innumerable callous points which cover their backs, and which are found on both sides of the foliage of the foregoing. The *leaves* of the present are also perhaps left deflexed. The *influence* and *flowers* afford no marks of distinction. The *berries* are most frequently of three globular lobes.

19. **T. ferricola.** Climbing Hoary Tournefortia. *Vahl. Eclog. fasc. 1. 17. Willd. n. 10. Poiret n. 11.* *(T. incana;* Poiret n. 9. Lamark Illutr. n. 1880. t. 95. f. 3.* Frutes;* Meregr. Brafil. 78, excellent as to the leaves, but though cited by Vahl, without any exception, the description shews it to be a Tynggenous *plant.)* — *Leaves* spreading, ovate, acute; rough with minute points above; *downy* and hoary beneath. Stem twining. Segments of the corolla awl-shaped. — Native of Hispaniola, and other parts of the West Indies. Like the two last in size and general habit; but the *inflans* are rather shorter; *leaves* more rounded, and often somewhat heart-shaped, at the base; their upper surface covered with much more numerous and minute, hair-pointed, white, callous tubercles, which produce somewhat of a hoary appearance; while the under
20. T. somenotos. Climbing Downy Tournefortia. Mill. Dict. ed. 8. n. 5. Poiret n. 12. — Leaves heart-shaped; downy beneath. Stem twining. Segments of the corolla awl-shaped.—Discovered by Mr. Robert Millar, near Cartagena, in South America. The twining stems reach to the height of ten or twelve feet. Leaves two inches long, and one and a quarter broad near their base, very downy beneath, on very short footstalks. Inflorescence apparently like the leaf. Flowers small, dirty-white. Berries juicy, with two, three, or four seeds. We gather from Miller's account, our only authority, that this plant comes very near our idea, of which it may possibly be a variety; yet the leaves seem to be of a broader figure, and their footstalks shorter.

21. T. ferruginea. Climbing Rlinky Tournefortia. Lamarck Illistr. n. 1882. Poiret n. 13. — "Leaves somewhat heart-shaped, acute; villous beneath. Stem somewhat climbing. Young branches very hairy."—Native of Hispaniola, where it is known by the name of Kellakoa. Allied to T. volubilis, but its branches are less elongated and trailing; its leaves and young shoots very much more hairy, or shaggy, with stiff, straight, ruddy-coloured hairs, equally remarkable on the footstalks, and ribs at the backs of the leaves. The latter are pointed, thick, harsh above, downy beneath, a little fringed at the margin, dark green, two or three inches long and one broad. Their footstalks straight, very short. Flower-footstalks much branched, hairy, divided into short spikes. Flowers small, unilateral, with a rough hairy calyx, and a short tubular corolla. Poiret.

22. T. feabra. Rough Small-leaved Tournefortia. Lamarck Illistr. n. 1883. Poiret n. 14. — "Leaves reflexed, oblong, obtuse; very rough above; wrinkled and downy beneath. Flower-footstalks branched, terminal. Berries conical." — Gathered in Hispaniola, by Joseph Martin. Branches slender and flexible, filleted, somewhat downy. Leaves stiff, slightly toothed, an inch long and four lines broad, rounded at the base, blunted at the extremity. Calyx hairy, rough, widely spreading, acute. Berry reddish, oval, almost conical. Poiret, whole description is our only guide, mentions a suffused variety, with leaves twice as long, but narrower, of which, however, he had seen neither flowers nor fruit.

23. T. feandens. Climbing Brown-flowered Tournefortia. Mill. Dict. ed. 8. n. 4. Poiret n. 18. — "Leaves heart-shaped, hairy. Spikes branched, reflexed. Stem twining. Segments of the corolla awl-shaped." — Found in Jamaica by Houon, who sent seeds to Miller. We preclude its being the same with that Mr. Brown mentions as T. feandens of Solander's manuscripts, and therefore we adopt from him the character of the corolla; though our Levigata was marked by Dr. Wright, with doubt indeed, as the plant of Solander; but it does not at all answer to the description. The prehensile shrubbery branches stems, ten or twelve feet high. Leaves near three inches long, one and a half broad near the base, acutely pointed, on short footstalks. Flowers in very slender, branching, terminal spikes, small, unilateral, of a dirty brown. Berries pulpy, with four seeds. Miller.

24. T. bifida. Self-levy Tournefortia. Poiret n. 19. — "Leaves soft, linear-lanceolate, villous. Flowers in roundish dense terminal spikes. Stem bifid." — Gathered by Comberfons at Buenos Ayres. Branches shrubby, round, clothed with stiff hairs. Leaves obtuse at each end, though a little contracted at the base, half clasping the stem, an inch and a half long, three lines broad, downy on both sides. Flowers at the ends of the branches, on a common footstalk, which divides into two parts, each bearing several very dense crowded spikes. Limbs of the corolla dilated, with five short blunt segments. Stalks and calyx clothed with numerous, stiff, glandular hairs. Poiret.


Besides all the above species, Poiret has a T. bifida, n. 16. Of this we find a specimen, gathered by Comberfons in the island of Mauritius; but it appears to be totally foreign to this genus. The stem is shrubby, with opposite, bluntly quadrangular, rugged branches. Leaves like opposite, though Poiret says alternate, on downy channelled footstalks, ovate, about two inches long, entire, even, smooth, pale green, with a yellow mid-rib, slender lateral ribs hairy at their origin, and innumerably, exceptionally minute, reticulated veins. Stipulae opposite, between the footstalks, and half as long, broad at the base, pointed, silky, deciduous. Flower-footstalks axillary, solitary, opposite, round, downy, longer than the footstalks, each bearing two, horizontally divaricated, simple, unilateral spikes, of numerous, small, fleshy flowers, in two rows. Germin inferior, oblong, silky, crowned with a calyx of five deep, round, silky segments. Corolla funnel-shaped, white, or yellowish, twice as long as the calyx and stems together, a little silky externally. Stamens within the tube; anthers large, oblong, obtuse. Of the style, stigma, or fruit, we can give no account. This shrub appears to belong to the natural order of Rubiaceae, but we have not sufficient materials to determine its genus.

Tournefortia, in Gardening, contains plants of the shrubby exotic kind, among which the species cultivated are, the hairy Tournefortia (T. hirsutissima); the climbing Tournefortia (T. volubilis); the fettid Tournefortia (T. factidissima); the dwarf Tournefortia (T. humillis); the broad-leaved Tournefortia (T. cymosa); the silvery Tournefortia (T. argentea); and the hoary-leaved Tournefortia (T. fulvifolius). Method of Culture.—These plants may all be increased by seeds, which should be procured from the countries where they grow naturally, and be sown in small pots filled with light earth, and plunged into a hot-bed of tanners' bark. They sometimes grow the first year, but often remain in the ground a whole year; therefore, when the plants do not come up the same season, the pots should be plunged in autumn into a tan-bed in the iwoe, where they should remain all the winter, and in the spring be removed and plunged into a fresh tan-bed, which will soon bring up the plants, if the seeds were good. When these are fit to remove, they should be each planted in a small pot, and plunged into a tan-bed, where they must be shaded from the sun till they have taken new root, and then be treated in the same way as other tender plants from the same countries, which require to be kept constantly in the bark-iwoe. They may also sometimes be increased by cuttings, which should be planted in pots, and plunged into the bark-bed.

These
These are all plants of the tender kind, which constantly stand in need of the heat of the stove in this climate.

They afford variety in stove collections, among others in pots, mostly retaining their leaves the year round.

**TOURNEHEM**, in Geography, a town of France, in the department of the Straits of Calais; 9 miles N.W. of Soissons.

**TOURMEME, REUJVSEPH DE**, in Biography, a learned Jesuit, was born at Reuses in 1661, entered among the Jesuits in 1683, and took all the vows of their order in 1693. In 1701 he reigned in the Jesuits college at Paris, for the convenience of conducting and superintending the journal of Treviso, or “Memories pour servir à l’Histoire des Sciences et des beaux Arts,” printed at Treviso, and periodically published from 1701 to 1767, when it fell with the society. In 1718, Tourmemoine was made librarian of the Jesuits library, in the protected house of the society, where he died in 1739, at the age of seventy-eights years. Tourmemoine published some other works of not less Merici.

**TOUENR, PETER LE, born at Alque, in Normandy, in 1556, gained prizes at Montauban and Besançon for his literary pieces, which were reprinted at Paris, and admired on account of their philosophic spirit and eloquence. But he was brought more into notice by his free translation of Young’s “Night Thoughts,” which were favourably received, was followed with translations of “Hervey’s Meditations”; “The Life of Savage”; “Ollan and other Gaelic Poems”; a great part of the “Universal History”; “Shakespeare”; “Clarissa”; and other works. These translations are introduced by prefaces, absid, according to poems and interesting ideas. His praises of Shakespeare provoked various attacks, and particularly from Voltaire. Le Touneur, who died in 1788, is represented as one of the mildest and most amiable of men. Nouv. Dict. Hist.

**TOURQUET**, Fr. from tourner, to turn, a machine, or instrument, employed in the practice of Surgery, in order to stop bleeding. It is only applicable, however, to the limbs, and its use is merely intended to be temporary, that is to say, until a more permanent method of checking the hemorrhage can be practiced. Thus, in the operation of amputation, the touriquet is applied with a view of preventing the loss of blood, which would otherwise happen before the surgeon had done with the knife and the saw, and before he could possibly devote his attention to the ligature of the arteries. But it is never put on tightly with the design of being left any considerable time in this way, as the constriction produced would inevitably bring on mortification. Sometimes, after amputations, operations for aneurisms, and in cases of wounds, it is left loosely upon the limb, so that, in the event of a sudden hemorrhage, it may be tightened in an instant. Here, however, the surgeon does not regard it as the principal means by which the bleeding is to be stopped; but simply as a temporary attendance, until an opportunity has been afforded of securing the bleeding vessels in another way.

When hemorrhage takes place from a large artery in one of the limbs, where the vessel can be conveniently compressed above the wound is it, a touriquet, judiciously applied, never fails in putting an immediate stop to the bleeding.

Before the invention of this instrument, which did not take place till the latter part of the seventeenth century, surgery was really a very defective art. No important operation could be undertaken on the extremities without placing the patient in the most imminent peril; and the want of the aid afforded by the touriquet made many wounds mortal which otherwise would not have been attended with the least danger.

Perhaps we are not justified in stating that the touriquet was not invented till the late period above specified; and it might be more correct to say, that it has been used in a rude and imperfect manner ever since surgeons have known that the flow of blood through a limb may be commanded by pressure. For when a simple band was tightly applied round a limb, in order to stop bleeding, it was, in fact, a kind of touriquet. The records of surgery, indeed, inform us, that the old surgeons used to surround the limb with a band, with which they made such a degree of constriction, that the circulation was quite stopped. These practitioners also believed, that the pressure of the band was advantageous in blemishing the limb, and moderating the pain of operations.

The violent pain and confusion, however, which this sort of touriquet occasioned, were frequently followed by knocking and abscesses, and therefore surgeons endeavored to devise some other method of checking hemorrhage. The application of the circular band was first improved, so that it caused less pain and less mischief to the skin. The limb was surrounded with a very thick compress, over which the band was placed. Two small sticks were next put under the band, one on the inside, the other on the outside of the limb; and they were twisted till the band was rendered sufficiently tight. It is in this manner, says Dionis, in his Treatise on the Operations of Surgery, that carriers tighten the cords which fatten the bales of goods in their carts. A French surgeon named Morel is said to have made this first improvement in the application of touriquets.

Although in the Armamentarium Chirurgicum of Scultetus, there is an engraving of a machine invented by this author for compressing the radial artery by means of a screw, M. Petit is universally allowed to be the first who brought the touriquet to perfection, by combining the circular band with a ferre, in such a manner, that the greatest pressure operates on the principal artery. It was in 1718 that he presented his improved instrument to the Academy of Sciences. It consists of two pieces of wood, one of which is superior, the other inferior. The inferior piece is about four inches and a half long, and nearly two broad. Its under surface is somewhat concave, while its upper one is a little convex; and the ends are hollowed out. From its middle part rises a round eminence, about seven lines high, and eight and a half broad. The superior piece is almost the same as the inferior, but rather shorter. The eminence which descends from its middle part is six lines high, and an inch and a half in diameter. This eminence is hollow within, and calculated to receive a wooden screw, the top of which is a fort of button for turning the ferre. The grooves of Petit’s screw were about four or five, and each of them four lines in diameter, in order that a half-turn might produce the necessary effect. Lastly, all the pieces of the instrument were fastened together with an iron pin, which went through the middle of the two pieces of wood, and through the whole length of the ferre. This iron pin was riveted under the inferior piece, and at the top of the button; in such a manner, however, that the ferre was capable of turning on it as on a pivot.

In order to apply this touriquet, the limb is to be surrounded with a double strap, about four finger-breaths wide, and made of chamois leather, which is the softest material that can be used. To one end of the strap a small double cushion is fastened, of the same length and breadth as the lower piece of the touriquet. A narrow compress, or cylindrical pad, is also requisite, for the purpose of compressing
prelling the track of the vessels. This comprefls a
very firm roll of linen, covered with chamois leather. The
ends of a piece of tape are fewed to the outer part of the
pad, and thus the tape leaves a passage for the leather flap.
By this artifice, the pad can be moved to any situation on
the flap which may be most convenient, according to the bulk
of the limb. The middle of the tape is to be felled to the
outside of the leather flap. The cylindrical comprefs, or
pad, is to be put over the courfe of the vessels. The double
cufion is to be placed on the opposite fide of the member,
while the leather flap is to furrond the limb in a circular
manner. All the different pieces of the apparatus are next
to be retained by the tape, which is to be tied at the fide of
the cuflion.

The tourniquet is now to be put over the cuflion, on that
fide of the limb which is furthest from the track of the large
veffels, and is to be felled in this situation by a double
band, with a hole in it for the reception of the upper part of
the fcrew.

In order to make proper compreffion, the fcrew is to be
half turned round from the right to the left. The upper
piece of the tourniquet becoming now further from the lower
one, the double band draws the pad, and preffes it againft
the veffels, fo as to make the dege degree of compreffion
for ftopping the flow of blood through the main arteries.

The following are the advantages attending the ufe of
Petit’s tourniquet. 1. It compreffes the lateral parts of the
limb lefs than the tourniquet previously in ufe. 2. It requires
the aid of no affilant either to hold, tighten, or loofen it.
3. The operator is able of himfelf to flop the flow of blood
through the artery by means of the fcrew. 4. When there
is any danger of hemorrhage after an operation, this kind of
tourniquet may be left on the limb; and in cafe of bleeding
coming on, the patient, if no one be at hand, can tighten
the inftrument himfelf as much as neceffary. 5. The con-
ftruction which this tourniquet produces may be continued
longer than that of the old method, without hazard of flopping
becaufe it does not altogether ftop the flow of blood
through the collateral arteries.

The tourniquet juft defcribed is certainly very complex,
when compared with what is now ufed by the belt modern
practitioners; but flill it is the original of the latter, and
both are confequently on the fame prinples. The feveral
pieces of a modern tourniquet are always kept connected
in felf, and, instead of two pieces of wood, ufed by Petit,
there is contrived a brafs bridge, which is capable of being
elevated or defpresse by means of a screw of the fame metal.
Over this bridge a very strong band proceeds, and by paffing
under two little rollers at the ends of the bridge, it always
remains connected with the inftrument. A convex firm pad is
fewed to the band, and put immediately over the artery when
the inftrument is applied. There are no cuflions for the op-
posite fide of the limb under the fcrew; but a thick piece of
leather, through which the band proceeds in two places, is
sometimes put under the lower furface of the brafs, and
ferves to prevent any bad effects of its prifure on the skin.
It is ufual, alfo, for the surgeon to fold fome rag, and put
it in this situation at the time of applying the inftrument.

Cooper’s Dict. of Prac. Surgery.

In the army, surgeons are provided with what are named
field tourniquets, in addition to fuch as are always found in
cafes of amputating inftruments. A field tourniquet is made
fimple in its conftuction, and is particularly intended for
ufe on the field of battle, where numerous foldiers frequently
fland in need of temporary compreffion of their bleeding
limbs, until the surgeon has time to pay their accidents fur-
ther attention. It confifts merely of a strong band, a pad
fixed to this band, and a buckle. It admits of being applied
in an infant. Every military furgeon is commonly furnifhed
with two or three dozen field tourniquets, and the plan is
undoubtedly good, as the prefervation of many lives by it
has confirmed.

The reader will have a better idea of the nature of a tour-
niquet, by referring to engravings of the inftrument; but
a fight of the thing itself will be still more ufeful.

Some tourniquets of different conftuctions are repre-
fented in Plate I. of the Surgical Infruments, where fig. 1. fews a
tourniquet of the molt fimple kind, which is tightened by
flipping the band D with the piece of wood B. C is the
pad which is to be placed upon the main artery, and A is a
fort of metallic or wooden guard, for preventing the twifled
part of the band from hurting the skin. Fig. 2. a tour-
niquet of a more modern and improved make. D the fcrew.
C, C, the two pieces of the frame or bridge of the tour-
niquet, which tighten the band B, when the upper piece
is raised by turning the fcrew. A is the pad. Fig. 3. repre-
sents another kind of tourniquet, which is tightened by a
convenience ftrewing a windfals in principle; C the handle
by which it is turned; E a ftee1 branch, which ferves to
prevent the handle from turning back again; B a fhort bit
of chain, which fixes itfelf in the notchcs of the circle, and
by carrying the band with it when moved round, tightens
the band D; A the basis of the tourniquet. Fig. 4. another
kind of fcrew-tourniquet.

TOUROIS, in Coinage, the name applied to French
money in the old frytem, as fterling is to English money.

TOURNON, in Geography, a town of France, in the
department of the Lozé and Garonne; 12 miles E. of Vil-
leuene d’Agen.—Allo, a town of France, fited on the
river Creufe, one part in the department of the Indre, and
the other in the department of the Indre and Loire; 7 miles
S. of Prouilly.—Allo, a town of France, in the depart-
ment of the Ardeche, on the Rhone; 22 miles N.N.E. of
Privas. N. lat. 45° 4’. E. long. 4° 54’.—Allo, a town of
France, in the department of Mont Blanc; 15 miles
E. of Chambery.

TOURNUS, a town of France, in the department of the
Saone and Loire, on the Saone; 3 pofts S. of Chalons
fur Saone. N. lat. 46° 34’. E. long. 5° 0’.

TOURO, a town of Portugal, in the province of Beira;
13 miles W.S.W. of Alfayates.

TOUROULNE, a town of Persia, in the province of Co-
lefi-an; 80 miles S.W. of Neifabur.

TOUROULINE, in Botany, a Caribbean name, ufed by
Aublet, but absolutely inadmissible into any classical work.
t. 424. Poiret in Lam. Dict. v. 7. 718.—Schreber and
Wildenow, after Scopoli, have called this genus ROB-
SONIA, which may be found in its proper place.

TOUROUMANG, in Geography, a town on the west
coast of Sumatra. N. lat. 2° 50’. E. long. 95° 0’.

TOUROUVRE, a town of France, in the department of
the Orne; 6 miles N.E. of Mortagne.

TOURRETTE, MARK-ANTHONY-LEWIS-CLARET DE
LA, in Biography, was born at Lyons in 1729, and having
studied at the college de Harcourt, at Paris, settled in his
native place, where for twenty years he occupied an impor-
tant poft in the magiftracy. Strongly attached to the
study of natural history, he formed, in 1763, a large collection
of infects, and a feries of specimens in mineralogy. In 1766
he introduced into a large park near the town of Arbrelle
all the foreign trees and shrubs that could bear that climate,
and in his own garden at Lyons, he cultivated more than 3000
species of rare plants. He was a companion of J. J. Rouf-
feau,
A moveable tower was constructed by the
royalties to late as the troubles under king Charles I., which
was surprised and taken by the parliamentary forces. It
was mistimed about; which fee.
Towers are also built to enable people, by their elevation,
to view a great distance. There are of all figures, as
square, round, pentagonal, &c. (See PHAROS.) In China
is a famous tower of porcelain, of which the Dutch relate
wonders.
Towers are also built for fortresses, prisons, &c., as the
Tower of London, the towers of the late Battle, &c.
The Tower of London is not only a citadel to defend and
command the city, river, &c.; but also a royal palace, where
our kings, with their courts, have sometimes lodged.
It contains a royal arsenal, in which are arms and ammunition
for 20,000 soldiers; the office of ordnance; a treasury
for the jewels and ornaments of the crown; formerly a mint
for coined money; the great archive, in which are preserved
all the ancient records of the courts of Westminster, &c.
and is the chief prison for state criminals.
In the midst of it is the great square white tower, built by
William the Conqueror, about the year 1079. Within the
Tower is a parochial church, founded by king Edward III.
and dedicated it the name of St. Peter in Chains, exempt
from all jurisdiction of the archbishop, and a royal chapel,
now defaced.
The chief officer of the Tower is a constable, or chief
governor, under whom is the lieutenant-governor, who acts
by his direction, and in his absence. He has, by grant of
several of our kings, seven apartments, two galleries and a pint
of wine before, and as much behind the main of all wine
ships that come to London; and a certain quantity out of
every boat laden with lobster, oysters, and other fish, and
double the quantity out of every alien's boat passing by the
Tower. Under the constable, besides the lieutenant are
deputy-lieutenants, a major, a chaplain, a physician;
gentleman-porter, gentleman-gaoler, slopman, and forty
warders. The gentleman-porter has charge of the gates to
lock and unlock them, and deliver the keys every night to the
constable or lieutenant, and receive them of him the next
morning; he commands the warders in waiting, and at
the entrance of a prisoner has for his use regiments of period
or else a composition for the same.
For the forenoon warders of the Tower, see WARDEN.
In the Tower is likewise kept a court of record by
prescription for the liberty of the Tower of East, West, South,
and all other actions of any kind.
The Tower liberty, subject to no jurisdiction but that of
the Tower itself, includes both the Tower-hills, part of East
Smithfield, Rotherhithe-town, Wellow-fleet, Little Mores.
Ailesbury-street, French-alley, Dock-street, Steward-
street, Green-street, Forst-street, and the other courts and
alleys within their compass, in Smithfield.
Tower, in Glass-making. See LIME.
Towers, Glass, in Parochial are small towers, made
in the form of buildings by M. Vassy, in his second and
third method, with rooms of cellars underneath, for accom-
modating men and guns. See FORTIFICATION.
Tower, Hollow. See HOLLOW TOWER.
Towers, Island, are those whose tops hang so far over,
as to appear in danger to people walking below. Such is
that of Philadelphia, 150 feet high, whose top overhangs the base
13 feet; and that of Belem, 150 feet high, whose top
overhangs the base 9 feet; and the reason why they do not
fall in, that their centres of gravity are supposed, or the
lines of direction in these fall within their base. But if
towers of this kind, that incline, were to be elevated in
height by any additional weight on their tops; in that case
the centres of gravity would be raised, and their lines of
direction fall without the base, so that the towers themselves
must fall.
Tower Mustard, and Buffard Tower Mustard, in Bosam.
See MUSTARD.
Tower Pond, an old English weight for coins. This
tower or moneyers' pond, with which gold and silver
were weighed in England before the reign of Henry VIII.
and which is still occasionally referred to on the subject of
coins, was lighter than the pound troy by fifteen penny-
weights troy.
Tower-Island, in Geography, a town of the state of Rhode
island, with a post-office; 17 miles S. of Providence.— Also,
a town of North Carolina, on the Neuse; 30 miles W. of Newbern.
Tower Island, a small island in the East Indian sea,
near the S. coast of the island of Flores. S. lat. 9° 7'. E.
long. 124° 37'.
TOWACHES, called Passi by the French, a tribe of
Indians in Louisiana, who live on the S. bank of the
Red river, by the course of the river upward of 500 miles
above Natchitoches, and by the nearest land distance about
340 miles. They have two towns near one another, the
lower town, where the chief lives, is called Natchez, and the
other is called Towahach. Their present chief is
designated the Great Bear. They are at war with the Spaniards,
but friendly to those French and American hunters who have
lately been among them, according to the statement of Mr.
Jefferson in the year 1805. They are likewise at war with the
Olges, as is every other nation. For many hundreds
of miles round them, the country is a rich prairie, covered
with luxuriant grass; which is green summer and winter,
with skirts of wood on the river bank, by the springs
and creeks. They have many hawks and owls. They raise
more corn, pumpkins, beans, and tobacco than they want
for their own consumption, so that some of these commodities
furnish articles of trade. They have but few guns,
and very little ammunition, which they keep for war, and
hunt with the bow. Their meat is principally buffalo, and
they seldom kill a deer, though plentiful. They have also
eagles, bears, wolves, antelopes, and wild hogs in abundance,
and white rabbits and hares, as well as the common rabbits.
The men are generally altogether naked, and the women
nearly so, with the exception of a small flap of a piece of
skin. They have many Spaniards among them, taken from
the settlement of Santa Fé, when they were children. Their
language differs from that of every other nation, the Tow-
achines excepted. Mr. Jefferson states the number of men
at about 500; a great number of them having been swept
away about four years before, by the small-pox.
TOWING-PATH, the road or path which is formed
along the borders of navigable rivers and canals, for the
purpose of drawing different sorts of materials for farm and
other uses, in some kind of small vessels, on them, either
by men or horses. (See E.C. fig. 16. Plate I. Canal, and fig. 1c.
Plate V.) These paths constitute one of the great
improvements in this art of navigation, by removing the
inconvenience and danger afforded by the mode of loading
the barges by means of men instead of horses, where they are
formed with that intention.
In speaking of the inland navigation of the river Severn,
and the county, in the Shropshire agricultural report, Mr.
Telford observes, that with regard to adopting the mode
of loading barges by means of horses, instead of the present
backwards and expensive custom of performing this service
by men. it is only necessary that a good towing-path for
horses should be formed along the banks of the river,
and which will no doubt take place, if any scheme of gen-
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ral improvements should ever be adopted. That in the mean time, a laudable example has been shown by Mr. W. Reynolds, of Ketley, who has formed a towing-path for horses near to the new manufactories at Coalport, and has carried it on through his father’s property to the iron bridge, a distance of about two miles: this being along some rugged banks, and over some of the worst fords which are on the river, proves, beyond contradiction, it is thought, that this sort of towing-path is practicable at no very extravagant expense, and besides, that it completely destroys the common objection of horse towing-paths where many rapid or fords intervene.

In constructing all sorts of towing-paths, they should be formed as much on the level as possible, and be well and firmly laid with some convenient sort of hard materials. Where they are for men or small animals, they need not be of such breadth or depths of hard substanences, as where large and many horses are in use. In carrying them over fords or runs of water, an experienced workman will mostly be necessary.

Towing-Path Wall, is a wall under the bridges, A B C D, (Plate V. Canals, fig. 40.) for keeping up the towing-path. TOWLGAW, in Geography, a town of Hindoostan, in Dowlatabad; 6 miles W. of Toolapour.

TOWN, a place inhabited by a considerable number of people, of an intermediate magnitude and degree between a city and a village, &c.

It is hard to give a tolerable definition of a town, because the idea is a little arbitrary and unfixed. A town is generally without walls, which is the character which usually distinguishes it from a city; but this does not hold universally.

Tithings, towns, and villages, have the same signification in law; and are said to have had, each of them, originally a church, and celebration of divine service, sacraments, and burials; though that seems to be rather an ecclesiastical than a civil distinction. The word town or vill is, indeed, by the alteration of times and language, now become a general term, comprehending under it the several species of cities, boroughs, and common towns. A city is a town incorporated, which is or hath been the see of a bishop: a borough is now understood to be a town, either corporate or not, that sends burgesses to parliament: other towns there are, to the number, according to Sir Edward Coke, of 8803, which are neither cities nor boroughs; some of which have the privileges of markets, and others not; but both are equally towns in law. To several of these towns there are small appendages belonging, called hamlets.

Entire vills, fir H. Spelman conjectures, consisted of ten freemen, or frank-pledges, demi-vills of five, and hamlets of less than five. These little collections of homes are sometimes under the same administration as the town itself, sometimes governed by separate officers; in which last case they are, to some purposes in law, looked upon as distinct townships. These towns contained each originally but one parish and one tithing, though many of them now, by the increase of inhabitants, are divided into several parishes and tithings; and sometimes there is but one parish where there are two or more vills or tithings. Blacklt. Com. b. 1.

We have several kinds of towns; borough-towns, market-towns, county-towns, &c. See Borough, &c.


Towns, Hanse. See Hanse.

Town-Clerk, or Common Clerk, an officer in the city of London, who keeps the original charters of the city, the books, rolls, and other records, wherein are registered the acts and proceedings of the city. He is to attend the lord-mayor and aldermen at their courts.

Towns-Dung or Manure, in Agriculture, that sort which is scraped up and collected from the streets and other places of large towns. This kind of manure is used in large quantities in some districts near the metropolis, as in Essex and some others, with great success and advantage, though at very considerable expense. Mr. Hardy, near Bradfield, in the above county, uses to the amount, it is said, of one waggon-load to every acre of summer fallow, at the expense, for the charge of the dung or manure only, of one guinea the load; it is then mixed with his own yard-dung in heaps for the purpose of exciting fermentation, from a notion that it has this effect, and that having it, the benefit will be in proportion. In several other parts of the same district, the usual mode of manuring per acre, is one waggon-load of town-muck with about five times the quantity of fresh foil collected from road-fides and hedge-greens.

Town-House. See House.

Town-Adjutant, in Military Language, is an assistant to the town-major.

Town-Major. See Major.

Town, Cape, in Geography, a town agreeably situated somewhat above 30 miles from the Cape of Good Hope, in a valley, between the Table and Lion mountains. It contains about 200 houses, many of which are magnificent; its streets are broad, but ill-paved. Provisions of every kind are very reasonable, and the town is well supplied with springs of excellent water, sufficient for the ships which recr to this port. S. lat. 34° 49’. E. long. 18° 23’.

TOWNSEND, a town of the state of Massachusetts; 36 miles N.W. of Boston.

TOWNSEND, a township of the state of Vermont, in the county of Windham, containing 1115 inhabitants; 25 miles S. of Windor.

TOWNSEND, Cape, a cape on the N.E. coast of New Holland. S. lat. 22° 15’. W. long. 209° 43’. See also Vermilion Point.

TOWPAAL, a town of Meckley; 12 miles S.E. of Munympour.

TOWRIDGE, a river of England, which paffes by Biddesford, and joins the Tow near Appledore, in Devonshire.

TOWY, a river of Wales, which rises in the county of Cardigan, and runs into the bay of Caermarneth, 6 miles below Caermarneth.

TOWYN, or TWYN, a small town in the hundred of Yrumaner, and county of Merioneth, North Wales, is 12 miles W. by S. from Machynlleth, and 223 miles W.N.W. from London. It is built of coarse schisto-fine stone, commands an unbounded view of the ocean, and is backed by a range of high mountains. During the bathing season, it is frequented by several genteel families. The town is surrounded by several populous hamlets, and respectable farm-houses. In the population return of the year 1811, the parish is stated to contain 1941 inhabitants, occupying 482 houses. Though the soil is rocky, and exposed to the influence of the western gales, yet industry has surmounted these obstacles; the marsh is converted into meadows and pastures; and corn overtops the sterile rock and bleak shore. The church contains several ancient monuments. Gwenddydd, daughter of Brychan, and wife of Cadell, prince of Powys, about the middle of the fifth century, was buried here. In the cemetery are two rude pillars: one of them, called St. Cadfan’s stone, is shaped like a wedge, about seven feet in height, with a crofs, and an inscription on each side in old British characters. St. Cadfan is supposed to have been interred in this church about the year
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tember, as well as in the east of Tankerville's collection. Mr. Lambert was informed by Mr. Moilson, that a farmer who lived near the native place of this shrub, named about May a year by the gathering of the fruit, which being beaten to powder, is used to poison the carrioles of lambs, &c. By feeding on these, the lambs are infallibly destroyed. This is a shrub, or small tree, fix or seven feet high, with spreading branches, which appear joints, from the scars where the footstalks have been inserted. Leaves three to four in a whorl, stalked, spreading, about three inches in length, oblong or oblong, entire, emarginate, ciliate, smooth, obtuse, with one red rib, and many branching lateral veins. Finely thick, channelled, about half an inch long. Male flowers in axillary, branched, yellowish panicles, shorter than the leaves; female ones on a separate plant, in simple, axillary, green tufts. Fruit smooth, about the size and shape of a Hickory-nut.

It has been debated between Mr. Miller and Mr. Ellis, whether our poison-apple, or wrenched-back American toxicodendron, be the true Japan varnish-tree: Mr. Miller maintains the affirmative, and Mr. Ellis the negative: for the arguments on both sides, see Phil. Trans. vol. xlii. p. 180, p. 366. vol. l. p. 252, p. 241. See VARNISH.

TOXICUM, a word particularly used to express a sort of poison, said to be used by the Indians to their arrows, in order to render wounds made by them incurable.

The wood, in a more general sense, signifies any poison.

The Indians are supposed to poison their arrows, daggers, &c. with the virtue of vapors, the metinerary of which continues a long time after the master is quite dried up.

TOXICUS, in Botany, a name by which some authors have called the arnica jurtina, of which walking-canes are made.

TOXILLI, TOZ,

in Ancient Geography, a people of India, in the number of three who inhabited territories near the rivers Ganges, Indus, Hydaspes and Amaili.

TOXOTAE, a name, among the Athenians, bowmen, a sort of inferior officers, or rather servants, who attended the lesvians.

They were much like the Roman velites; there were a thousand of them in the court of Athens, that lived in tents, erected both in the forum and afterwards in the acropolis.

See LEVIES.

TOZER, in Geography, a town of Africa, in the country of Sahara; 52 miles S.S.W. of Gafsa. N. lat. 35° 52' E. long. 8° 15'.

TOZZETTIA, in Botany, was so called by professor Savv of Pisa, in honour of his learned friend Dr. Guiseppe Tiziano Tizzetti, the present professor of the history and manners of the celebrated Michelis, at Florence, and son of the botanist after whom. Tizzetti was named, who afterwards took the name of Tizzetti; see the characters just indicated. Savv in U.S. Ann. v. 24. 52. Unfortunately the plant thus denominated is a genuine species of Clarygus; as proved, for Schreber has made it, in Phil. Genn. v. i. 1742, and at the writer of the present article has long ago shown, in Te. of Linn. Soc. v. i. 1747, as well as in Prodr. Phil. Genn. v. i. 1742 it being not only the Phaleric aucuparia of Linnaeus, but his wife's. Coccinia aucuparia. We find it difficult to account for the mistake of Linnaeus in referring this grass to Phaleric, of which genus it has neither the habit nor characters.

TOZZI, ANDREAS, in Botany, a member of the Philharmonic Society at Bologna, where he was born, and where he was a disciple of Padre Mattioli. In 1543 he was appointed
appointed maestro di capella to the duke of Brunswick, for whole court he first composed "Andromacher," and in 1775 "Rinaldo." His subsequent productions were unknown to Gerber. In Italy, Tozzi has two operas recorded; "Tigrane" in 1762, and "L'Innocenza vindicata" in 1763.

TOZZIA, in Botany, received its name from Micheli, in honour of the reverend father Bruno Tozzi, abbot of Vallombrosa, who found this rare and curious plant, on the alpine heights of Tuscany, above the celebrated and romantic solitude, where his abbey is situated. This learned ecclesiastic, unlike many of his monkish brethren, delighted to adorn his Creator through his works, and was the cheerful and welcome companion of Micheli, in many of his botanical excursions, over the Italian alps, as well as along the shores of the Mediterranean. He was a fellow of the Royal Society of London, and of the Botanical Society of Florence. A number of figures of rare Tuscan Orchideæ, drawn by him, may be seen in Petiver's Works, vol. 1. t. 128.—Linn. Gen. 306. Schreb. 403. Wild. Sp. Pl. v. 3. 202. Mart. Mill. Diet. v. 4. Mich. Gen. 19. t. 16. Jul. 97. Lamarck Illutr. t. 522.—Chafers and Order, Díí-dííaímía Angioípífíraí. Nat. Ord. Perfíóñá, Linn. Ly-íí-,íímántíis ofíí, Juff.

Gen. Ch. Gal. Períthífer inferior, of one leaf, tubular, very short, five-toothed, permanent. Cor. of one petal, ringent; tube cylindrical, longer than the calyx; limb spreading; its upper lip in two, lower in three, segments, all nearly equal and roundish. Stam. Filaments four, concealed beneath the upper lip, unequal; anthers roundish, of two lobes, each with a spur at the base. Ptál. Germen superior, ovate; blue thread-shaped, agreeing with the filaments in length and situation; Rígma capitáte. Peric. Capules globose, of one cell and two valves. Seed solitary, ovate.

Efl. Ch. Calyংx tubular, five-toothed. Corolla ringent, with five rounded segments. Capsule globose, of one cell, and two valves. Seed solitary.

Obf. Surely the affinity of this genus to Euphrofía, Lathrea, &c. is apparently, even without the character of the spurred anthers, indicated by Jacquin. The fruit, which in this tribe affords such admirable distincions, is here peculiarly marked. Melamýripum alone approaches it, by the fewness, size and shape of its seeds. Tozízia is erroneously described by Linkus, with a single-valved capsule. We would premise to remove this genus to the Pediciulares of Jussieu.

1. T. alpina. Alpine Tozzia. Linn. Sp. Pl. 844. Wild. n. 1. Savi Etrusc. v. 2. 164. Jacq. Alfr. t. 165. (T. alpina lutea, alfinæ folio, radice fquamata; Mich. Gen. 20. t. 16. Euphrofía luteá alfinæfolia, radice squamata; Bauh. Pin. 234. Prodr. 111. Anonyma fratriis Gregoriis, radice dentaria; Column. Ecpl. v. 2. 49. t. 50. Dentaria buguloides, &c.; Meuntz. Pugli. t. 9. f. 3. 4.)—Native of moll fttbilly alpine places, in Austria, Switzerland, Dauphinie, Italy, and the Pyrenees, flowering in May. Mentzelius gives an interesting account of his gathering it among the melting snows, on a lofty precipitous mountain, near the source of the Iper, in 1654. The perennial root consists of numerous, fleathy, imbricated scales, and bears a solitary, herbaceous, erect, branched, square, juicy ftem, about a foot high, lightly downy at the angles only. Leaves opposite, ffeille, ovate, ribbed, succulent, smooth, lightly but coarsely notched, an inch long at most; the numerous floral ones much smaller. Flowers axillary, solitary, on simple slender stalks, shorter than the leaves, bright yellow, a little drooping, perfectly two-lipped, and rather more irregular than Micheli represents them. Calyx oblique, smooth, brownish. We know of no attempt to cultivate this plant, nor would it perhaps be possible.

TRAABURG, in Geography. See DRAABURG.

TRAABACH, a town of France, in the department of the Sarre. Its neighbourhood is a fine wine country. Opposite the town, on the other side of the Moselle, France, after the treaty of Nimeguen, erected a fort, called Mont Royal; but the demolition of it was made an article of the peace of Rywick: 34 miles S.W. of Coblenz. N. lat. 50° 0′. E. long. 7° 5′.

TRABAY, a river of Spain, in the province of Granada, which runs into the sea near Mixcura.

TRABEATION, TRABRATIO, in the Ancient Architecture, the same with entablature; which see.

TRABENKA, in Geography, a town of Sweden, in the island of Aland.

TRABIA, a town of Sicily, in the valley of Mazara; 2 miles W. of Termini.

TRABUNACTUM, in Ancient Geography, a town of Africa Propria, on the route from Tácapae to Leptis Major, between Adanmadun and Tramufdius. Anton. Tín.

TRACANA, a town in the interior of European Sarcenia, in the vicinity of the river Carcinius. Poletomy.

TRACE, a mark or impression which any thing leaves behind it in palling over another.

Traces of the Brain, among the Cartesian philosophers, are those impressions, more or less deep, which, they say, fenible objects make on the fine fibres of the brain, by means of the organs of sense.

These impressions are also called traces of the object; the corule of the animal spirits, they say, serves to keep them up, and to renew them.

The vivacity of the imagination, they say, arises from the prodigious quantity of traces of different objects in the brain; which are fo linked together, that the spirits cannot be sent into one of them, but they run into all the rest; by which means the ideas occasioned by the application of the spirits to those several traces, are all excited, as it were, at once.

Memory, according to the same, consists in the traces which the animal spirits have impressed.

Trace of a Hare, among Hunters, is her footing in the snow; distinct from other treading, called doubling and pricking, &c.

Traces also denote the tracks of ravenous beasts, as wolves, wild beasts, &c.

Traces, Lady's, in Botany. See OPHRYS.

Trachea, in Ancient Geography, a name which Ovid gives to Aixur.

TRACHEA, in Anatomy, the wind-pipe, (from αυτύκερας, a rough tube containing air, (rough from its cartilaginous rings) whence the Latin astera arteria.) It is the tube conveying air into the lungs, and commencing at the root of the tongue. See Lungs.

Trachea, Wounds of. See Wounds.

TRACHE, in Vegetable Physiology, is the appellation given by Malpighi, Grew, &c. to the large spiral-coated vessels of plants; which, being generally found filled with air only, are likewise termed air-vessels. The discoveries of Dr. Darwin, Mr. Knight, and others, have shewn them rather to be sap-vessels, and that the empty state in which they are usually found, is owing to their contents having been expelled on deflection, by the elasticity and irritability of their coats. Such is known to be the fact with regard to the arteries of animals. We have explained the nature of these vessels, and their functions, under the articles Circula-
Circulation of Sept. Leaf, and Spiral Vessels, the latter being now their most usual denomination. It is preferable to any of the above, as not involving any theoretical opinion.

TRACHEAL ARTERY, in Anatomy, a branch of the right subclavian, running up from it in a winding course, along the aorta, to the glandular thymus and larynx, detachling small arteries to both sides; one of which runs to the upper part of the saccula. The tracheal artery may likewise be called utricular inferior. See Artery, and Lung.

TRACHELAGRA, formed of trachea, novil, and ongo, fexure, a term used by some medical writers, to express the gout in the neck.


Gen. Ch. Cal. Persant superior, very small, in five deep segments, permanent. Cor. of one petal, funnel-shaped; tube cylindrical, very long and slender; limb small, spreading, in five deep, ovate, concave segments. Stam. Filaments five, capitellate, nearly the length of the corolla; anthers simple, oblong. P. Germen inferior, roundish, with three angles; style thread-shaped, twice as long as the corolla, rather swelling upward: stigma capititate, glabrous, slightly three-lobed. Peric. Capsule roundish, bluntly three-lobed angular, of three cells, curling by pores at the base. Seed numerous, minute.


Obs. Linnamhus himself corrected in his Sylbus Nature the error in his Genera, of the single-celled capsule. The remark subjoined in the last-named work, of some bicellular species, properly belongs to the preceding genus, Petustemis.

1. T. ceruleum. Blue Throatwort. Linn. Sp. Pl. 243. Supp. 145. Willd. n. 1. Ait. n. 1. (Trachelis azurea umbellifera; Pern. Bald. 44. Valeriana cerulea, urtica folio; Brot. f. c. 683, 684.)—Leaves ovate, serrated. Corolys compound.—Native of shady rocky places, in Italy, Spain, and Barbary. Frequent on the ancient walls of Rome, flowering in the spring and summer. It may be kept for many years, with us in a greenhouse, though usually considered as a hardy biennial. The root is tawny, white, with many fibres. Herbages smooth, dark green, about two feet high. Stem roundish, often branched, leafy. Leaves alternate, ovate, acute, entire, an inch or two long, and half as broad, sharply, and sometimes very deeply, serrated. Footstalks linear; the upper ones half the length of the leaves; lower longer. Flowers very numerous, of a fine

blue, in a terminal, corymbose, level-topped, tufted, or panicled, with awl-shaped bracteas, in aspect, though not, in colour, resembling a Valerian.

2. T. diffusum. Slender Shaggy Throatwort. Linn. Suppl. 145. Willid. n. 2. Thumb. Prodr. 38.—Leaves awl-shaped, erect. Stem panicled, with divaricating branches. Found by Thunberg, at the Cape of Good Hope. Mr. Masson sent it in 1787 to Kew, where it is a greenhouse plant, flowering in August. Stem a foot or more in height, woody, much branched in the lower part, the branches erect, straight, round, leafy, smooth, or very minutely downy. Leaves scattered, slender, an inch long, very narrow, revolute, entire, awl-pointed, nearly or quite smooth. Flowers blue, with a pale tube, small, foliary at the ends of the numerous, widely spreading or deflexed, branches of the slender, rigid, smooth panicled.

3. T. trilobatum. Slender Fringed Throatwort. Linn. Suppl. 145. Willd. n. 3. Thumb. Prodr. 38.—Leaves linear, flat, recurved, fringed. Stem branches. Flowers lateral.—Brought by Thunberg likewise from the Cape, but as yet a stranger to our gardens. The long woody root bears a bushy woody firm, a few inches high, divided from the bottom into many branches, clothed with crowded, narrow, recurved, frill-pointed leaves, half as long; strongly fringed at the margin; flat above; keeled beneath; often somewhat downy. Flowers numerous, axillary, foliary, felilile, slender, apparently white or yellowish, except the tips of the corolla. We must rely on the authors cited for the determination of the genus. The style does not project out of the flower. The flower is inferior. TRACHEUM, in Gardening, contains a hardy herbaceous plant of the perennial kind, of which the species cultivated is the blue throatwort (T. caruleum). It is a plant that is perennial in its nature, being very lasting in culture which are dry and not of a rich quality, but not in the contrary fort.

Method of Culture.—It is raised from seeds, which should be sown in the autumn when well ripened, or in the spring, in a bed or border of light mould. And when the plants are two or three inches in height, they should be set out in nursery-rows six inches apart, to remain till the following autumn, when they should be planted out where they are to remain.

These are flowering perennials which may have their seeds sown in the crevices of old walls, runs, and rockeries with much effort and advantage, as the plants continue several years, and display many flowers. They afford ornament in the above sort of works, and other situations where the earth is poor.

TRACHELO-MASTOIDEUS, in Anatomy, complexus minor; a small narrow muscle, situated at the posterior and lateral part of the neck, and extending from the mastoid process to the transverser process of the vertebrae. Behind, it is covered by the splenius, and the transversus falls, to which it is connected: in front, it covers the complexus, the obliquus capitis, the posterior extremity of the digastricus, and the occipital artery. Its inner edge is close to the complexus, and is sometimes united by a muscular flap to the longissimus dorsi. The outer edge is fixed by small tendinous and fibrous slips to the transverser process of the fourth and fifth cervical vertebrae: and is unattached above. The inferior extremity of the tracheolo-mastoideus is fleshy and pointed, and fixed to the transverser process of the seventh cervical vertebrae, or sometimes of the first dorsal bone. Thence it ascends perpendicularly, growing thicker and broader to its upper end, which is fixed to the back of the mastoid process in front of the splenius. It is attached to
the vertebral processes by small tendons, which produce muscular slips united in the body of the muscle: a flattened tendon is the medium of infection in the head. When the right and left muscles act together, they relieve the head, after it has been bent forwards, and they carry it backwards. The muscle of one side inclines the head and neck laterally.

**TRACHELOPHYMA**, a swelling of the thyroid gland. See Bronchocele, and Thyroid Gland.

**TRACHELOS**, a word used by some anatomical authors to express the neck.

**TRACHENBERG**, or Drachenberg, in Geography, a principality of Silezia, bounded on the N. by Poland; on the E. and S. by the principality of Oels, and on the W. by Wohlan. It was formerly a part of Oels, but erected into a distinct principality, in the year 1741, by the king of Prussia, in favour of the count of Hafeld and Gleichen, who was made a prince of the empire, by the emperor Francis, in 1748.

**TRACHENBERG, or Straburck, a town of Silezia, and capital of the principality of the same name; 14 miles W.S.W. of Militch. N. lat. 51° 28'. E. long. 16° 50'**

**TRACHEOCELE**, an enlargement of the thyroid gland. See Bronchocele, and Thyroid Gland.

**TRACHEOTOMY**, (from *τραχηλός*, the wind-pipe, and *κόπω*, to cut) in Surgery, denotes the operation of making an opening into the wind-pipe.

When a foreign body has entered the trachea, the only means of relief consists in making a longitudinal incision through the skin and cellular substanee of the neck, in order to expose the wind-pipe, and fit it open in the same direction. Several of the old practitioners conceived the propriety of this operation, which Junkers, in his "Confpectus Medicinæ Chirurgicæ," profcribed in the most polite terms. How, indeed, would it be otherwise possible to put an end to the suffocation and convulsiv cough, which the extraneous substance produces? Few practitioners, however, have ventured to do the operation. In the year 1650, the performance of it was recommended by Bonnet, upon a child seven years of age, who, in eating some rice-foup, swallowed a small bone, which passed into the trachea. The young patient pointed out with his finger the place where the foreign body had stopped, and which was exactly opposite the middle of the throat. A physician, who was consulted, gave it as his opinion, that the operation was improper, either because he was not convinced of the presence of the bone in the trachea, or because he thought that it could not be taken out without exposing the child to a certain death. At the end of five days the boy died, and the trachea having been opened, the extraneous substance was taken out of it with the greatest ease. Raw and Heifter also successfully extracted foreign bodies from the trachea; the former, a piece of mushroom, which had been swallowed with some soup; the latter, a bean, which had fallen into the wind-pipe.

Louis was not equally fortunate, in a cafe where the operation would have infallibly saved the patient's life. A child seven years old, like that of Bonnet, was amusing herself with throwing up small dry beans, and catching them in her mouth. She supposed she had swallowed one of them; but was instantly seized with a difficulty of breathing, and a most fatiguing convulsive cough. It was suspected that the bean had stopped in the throat, and every thing was tried, which was thought to be likely to make it descend into the stomach, or cause it to be ejected from the mouth. The symptoms, however, recurred from time to time, with the addition of convulsions of the limbs. The cafe had gone on in this manner two days, when Louis was consulted. He found the child sitting up in bed, leaning upon her two arms, and breathing with difficulty. When he asked her where she felt any thing the matter, she placed her left fore-finger upon the trachea, betwixt the larynx and the sternum. The consideration of the various circumstances of the cafe made him conclude, that the bean had passed into the wind-pipe, and that the practice of bronchotomy was indispensably necessary for its extraction. Others, who were called into consultation, entertained a different sentiment. M. Louis could not bring them over to his opinion. The opposition which they made even increased, as the child appeared for a time a little better. But at length a new symptom occurred, which no one had yet observed, and which two hours previously did not exist. The child was evidently affected with an emphysematous swelling on each side of the neck above the clavicle. She took an emetic, which only had the effect of disturbing her. The third day she seemed more tranquil, though her respiration was always difficult. In the evening she died. When the trachea was opened, the bean was seen lodged at the upper part of this tube, whence it admitted of being most easily extracted with a pair of forceps.

The long intervals of cafe which the patient had, contributed particularly to throw doubts on the presence of the extraneous body in the trachea. It was suppos'd, that it would necessarily have kept up there a continual irritation, which could not have allowed of the alternations of suffuring and cafe which took place. But the fact is, the body was smooth, and it had defended below the glottis, the sensibility of which is double less than that of the trachea, so that it only produced urgent symptoms, when it was forced by the action of respiration against the lower part of the glottis, whose ligaments it hurt, and whose aperture it closed in such a manner, that the air was no longer capable of passing through it with its wonted freedom. It is to this cause that the emphysema, which has been spoken of, must be imputed; for the air being urged back into the lungs, must have ruptured some of the bronchial cells, infiltrating itself into the cellular texture of this viscus, and extending from below upward to the lower part of the neck, the integuments of which were elevated by it. This symptom is truly pathognomonic. It was also imagined, that if the extraneous substance had been in the trachea, it would have caused more quickly a fatal suffocation; but there are many cafes on record, proving that patients have survived the accident a long while. Bonnet's child, and another mentioned by Marcellus Donatus, did not die until the fifth day. The only symptom which the last experienced, was a slight cough, with a little irritation. The cough which occurred before death was attended with efforts, in which the child turned livid, as if it had been strangled with a rope. Other children also, who have swallowed beans, and whose cafes are related by Louis, died; one on the eighth or ninth day after the accident; the other at the end of three weeks, and after having in the interim followed the amusements of their age.

Perhaps it may be apprehended, that a foreign body, after its entrance into the trachea, will descend by its weight to the bottom of this tube; or, that after the proper incisions are made, its extraction will be attended with too much difficulty; but to these two objections, experience gives the most decisive answer. In almost all cafes of this sort, the foreign body has been found opposite that part of the trachea which would have been opened, if tracheotomy had been performed; and the experiments relating to this operation which have been made upon living animals, for the purpose
purposo of judging the facility or difficulty of extracting foreign bodies from the trachea, have drawn, not only that they remain at the upper part of the trachea, (whence they are forced by the air which endeavours to find a way out from the lungs,) but that they even of themselves come out of this tube, and are thrown out to a distance by the same cause, immediately a sufficient opening for their escape has been procured by the surgeon. We are indebted for such experiments to M. Favre, from a student in surgery at the Hotel des Invalides, and since member of the college of surgery at Paris. A large dog, which was muzzled, had an incision made under his jaw, spacious enough to let the tongue be drawn out through it. M. Favre took an opportunity, when the animal was in the act of inspiration, of introducing into the glottis an extremely substance of an irregularly spherical shape. The dog was wheezed with convulsive motions, which gave reason for apprehending immediate suffocation; but symptoms abated sufficiently, to allow the operation of tracheotomy to be deferred six hours. The wind-pipe was then opened by a longitudinal incision, which divided three of its cartilaginous rings. Scuriosity was the bukhoury withdrawn, when a strong respiration expelled the foreign body out of the wound; and as soon as it was a second time introduced, it was expelled again.

The experiment was repeated ten times with the same result. M. Saintiaux informs us, that he had seen M. Favre introduce into the wind-pipes of other dogs, extraneous substances of every description and figure, and amongst other things nails and small leaden bullets. These were even pushed very far down with instruments; but notwithstanding this, they were thrown out with force as soon as they were left to themselves.

The difficulty of finding and extracting foreign bodies which are lodged in the trachea, must therefore be no longer urged as a pretext for omitting the performance of tracheotomy in all cases in which there is imminent danger of suffocation, in consequence of the presence of those bodies. If, after the instruments and trachea have been divided, they should neither make their ascent nor protrude themselves at the opening, the surgeon should at once endeavour to find them with a pair of forceps, or any other instrument calculated to facilitate their extraction. All that now remains to be done, is to check the wound in the most simple manner, and to promote its cicatrization by the usual means. The operation which we have been speaking of, may be successfully conducted in some other cases. When the function of expiration is but slightly impaired in inflammatory conditions, or by the presence of a foreign body in the cleft of trachea, which foreign body cannot possibly be extricated, we pushed down into the stomach, the patient’s life may be saved by making an opening into the trachea or larynx. The necessity for such an operation was recognized in the very infancy of the art. With the same view, Hippocrates advised the introduction of a tube into the trachea. This had practice prevailed until Achates, who proposed the method of making an incision into the larynx of patients who were in danger of suffocation. This operation however, met with opposition. Celsus Alcidemus considered it as ridiculous and absurd. But it met with advocates in several other celebrated physicians, such as Aretaeus, Oribasius, Erasistratus, and especially Paulus Magens, who defended it in the following terms.

"If the patient be not made into the trachea, under the larynx, about the third or fourth ring. This incision is the most proper, because it is not covered with flesh, and the vessels are not seen in it. The patient’s head is to be carried backward, so that the wind-pipe may project more forward. We make a transverse section between two rings, so that the cartilages may not be wounded, but only the membrane which joins them together."

The Athenians, who succeeded the Greeks, were also advocates for tracheotomy. It does not appear, however, that they often practised the operation, on account of the dangers by which it was liable to be followed. Since the revival of learning, the possibility of doing it has been more generally admitted. The subsequent frequent examples of wounds of the throat, where the trachea has likewise been divided, have now produced a conviction, that this canal may be successfully opened in such cases as require it.

Fabricius ab Aquapendente was the first who proposed the operation in strong terms. He judiciously examined and considered every part of it, and was fully aware of its advantages.

The cannula which has been employed for placing in the opening made in the wind-pipe, seems to have been invented by him. He recommends it to be introduced between two of the rings; to have a straight shape; and to be furnished with wings, by means of which it may be fastened in its place. Its length should not be great, lest it should reach too far, and hurt the back part of the wind-pipe. Lastly; Fabricius advises it to be worn only during the impediment to respiration, since as a foreign body it may do harm, and cause pain and coughing.

Caffieri, his pupil, also carefully treats of bronchoeotomy. He describes the manner of performing it. By the first incision, the skin is to be opened longitudinally over the trachea. By the second, which is to be made between the muscles going up to the larynx, the wind-pipe itself is to be brought into view. A transverse opening is then to be made in it below the thyroid gland. Mompagni gives much credit to this author for having first noticed this gland, which in its enlarged state may materially increase the difficulty of the operation. Caffieri approves of the cannula recommended by Fabricius, which he thinks ought to be made of silver, of a flat form, curved, every where pierced with small holes, and fastened to the neck with a ribbon. He was quite apprised of all the inconveniences, which Fabricius pointed out as being liable to attend the employment of this instrument.

While these two Italian practitioners professed themselves to be in favour of bronchoeotomy in cases where the necessity for it exists, a French surgeon, M. Habibott, endeavoured to bring the operation into requisites. The method which he has published upon this subject, is entitled, "Questions Chirurgicales, par lequel il a été démontré que le Chirurgien doit suffisamment pratiquer l'Opérature de la Bronchoeotomie, volgarément dite Laryngotomie, ou Perforation de la Plate, ou Tyranne." This treatise made its appearance in 1669. Besides the reasons upon which this author supports his observations, he relates several cases in which bronchoeotomy saved the patients’ lives. The first is that of a young girl, who was shot in the throat. The bullet, after breaking the larynx, and particularly the left side of the thyroid cartilage, made its exit below the superior angle of the jugala. So considerable a degree of swelling followed, that the patient was almost suffocated. Habibott introduced into the trachea a leaden tube, which was worn three weeks, until the inflammation had subsided. The patient got well. The second person upon whom he performed bronchoeotomy was a young man, who had received twenty-two wounds in the head, face, throat, hands, arms, chest, back, wort, and thighs. There were done with a sword, knife, and pincers. In the evening of the same day, Habibott perceived that the patient was nearly suffocated in consequence of the inflammation and swelling of the throat. He was therefore de-
TRACHEOTOMY.

terminated to make an opening in the trachea, below the wound, opposite the upper part of the larynx. The respiration was immediately established again, and the wound was kept open with a grooved tent, until the tumefaction of the larynx was diminished. The cure was complete in three months. M. Louis was of opinion, that, in these two cases, the cannula only served to keep the lips of the wound in the skin apart, because, in the first, the thyroid cartilage was broken so extensively, that it could hardly be supposed to form an obstacle to the passage of the air; and because, in the second, the wound of the trachea had allowed the air to enter and come out again with ease, without the assistance of any tube.

We find in Habicot's essay a third instance in which tracheotomy was successfully performed. "A lad, fourteen years of age, who had heard that gold, when swallowed, did no harm, having sold some merchandise at Paris, for which he had received about nine pittloos, wrapped them up in a piece of cloth and swallowed them, for fear of being robbed. But as they could not pass through the narrow part of the pharynx or oesophagus, his face became so frightful and deformed with swellings and blackness, that his companions could not recollect him. Hence, having caused him to be brought to my house, and not being able to make him void, nor get the obstacle into his funnel, so closely was it fixed by the swelling of the throat; and considering that he would be suffocated, I first made a favourable prognosis, and then performed bronchotomy, which being finished, he revived so rapidly from the violence of the air, that the bystanders were alarmed; but the tumour and unfavourable colour of the face having disappeared, I assured them that he would recover," &c. The foreign bodies were then pushed down into the funnel with a leaden probe, and these were discharged about a week afterwards at different times with the stools. As the patient was so promptly relieved, probably Habicot never thought of keeping the wound open with a cannula, but endeavoured to heal it as expeditiously as possible. In the two other cases, he employed this instrument, which he has described in the last chapter of his treatise.

Since Habicot, and before the end of the seventeenth century, the testimonies to be found in favour of tracheotomy are very numerous; but no one did any thing to perfect the operation until Decker, who, in 1675, proposed to practise it with a small trocar, armed with a cannula. The method is more simple, more easy, and subject, as some have conceived, to fewer inconveniences, if the trachea be not pierced until this tube is exposed by an incision made in the anterior and inferior part of the neck, betwixt the muscles defined to depress the os hyoideum and larynx. Paulus, in his notes on Van Horne, imputes the preceding method to Sanctorius, who recommends the trachea to be pierced in the operation of tracheotomy, with the same instrument which he had invented for the paracentesis of the abdomen. By this means the trachea is opened, and the cannula placed, at the same time, a circumstance which prevents the bleeding, which might otherwise escape from the edges of the wound, and occasion an inconvenient and perhaps fatal cough. Dionis, who only proposes bronchotomy in the case of inflammatory quinsy, thinks that it may be done in a more expeditious manner, with less pain, and in a way more calculated to procure a speedy cure, than the mode which was previously in use. This plan consists in performing the operation by one puncture, so that the lancet at once opens the integuments and the interstice of the cartilages of the trachea, and the instrument is not withdrawn before the introduction of the probe, which is to serve as a conductor for the cannula. The advantages which Dionis ascribes to this method would merit the greatest attention, were they not counter-balanced by the inconveniences which result from it. There are not many subjects, whose necks are so entirely destitute of fat, that the interstice of the rings of the trachea can be felt. This tube, whose figure is cylindrical, easily slips under the fingers, and the change of position may render Dionis's manner of operating extremely difficult. The operation is not without danger of wounding the posterior parietes of the trachea, because one cannot penetrate into its cavity, through the thickness of the integuments and cellular substance, without using a degree of force which it is difficult to regulate with precision. Lastly, when the cannula is put into the wind-pipe, this canal closes, and defends so considerably in various circumstances, and especially in the action of deglutition, that the instrument must be liable to flip out of it. Verduc, before Dionis, had made some remarks on the poffure of the patient during the operation. His head was extended back, and the integuments were pinched up into a transverse fold before being divided. Verduc observed, that by inclining the head back, the difficulty of breathing would probably be increased, and that when this position was adopted, the integuments of the neck could not easily be pinched up into a fold. For such reasons, he thinks that posture best, in which the patient breathes with most freedom.

Tracheotomy had been practised only with a view of relieving the suffocation arising from the quinsy, and that which is produced by the pressure of a foreign body in the oesophagus upon the trachea. Detharding, professor of medicine at Rollock, published in 1714 a dissertation, entitled "De Methodo subvencendi submeretis per Laryngotomyum," the object of which was to prove, that this operation is necessary in order to restore drowned persons. The principle with which he vets out is, that drowned persons cannot breathe when taken out of the water, because the epiglottis is in contact with the glottis, and closes this opening so closely, as to leave no passage at all for the air. But some observations, carefully drawn up by M. Louis, have proved that the glottis is open and free in drowned persons, as well as in persons who have perished of any other kind of death, and that their death is caused by the water which they have forcibly inspired, and which mixing with the air and mucus with which the bronchial and bronchiolar cells are naturally filled, obstructs and blocks up these organs, so that the air can no longer enter them. But if Detharding has been mistaken in this point, he has not been deceived in regard to the advantages of tracheotomy in every other circumstance, and the little risk that is in practising it. He states, that the integuments, and the membrane which unites the rings of the trachea, being the only parts which ought to be cut, no vessels nor nerves of importance need be wounded.

Though there are no nerves of considerable size in the track through which the incision must necessarily follow, the same observation cannot be made in respect to the blood-vessels. The thyroid gland sends down, to the left subclavian, veins which, after having ramified on its anterior surface, unite into two trunks, the left of which most commonly paffes in front of the trachea, at the lower part of the interstice, which lies between the sternum-hyoidi muscles. In the greater number of subjects, these trunks only form one at the place of their intermission. Sometimes they continue separate. Sometimes, also, one of them terminates in the left subclavian vein, and the other in the right. The left may be injured in dividing the cellular substance which covers the trachea. This canal itself has likewise its own vessels, which may be cut, and bleed a good deal. This was what
what happened in a cafe infected by Hevin, in his memoir on foreign bodies lodged in the œsophagus and trachea, in the first volume of the Mémoires of l’Acad. de Chirurgie. A Spanish soldier, twenty-three years of age, was nearly dying of suffocation from quinsey. Tracheotomy was deemed the only means by which his life could be saved. The wind-pipe having been exposed by a longitudinal incision, an opening was made between two of its cartilaginous rings; but the patient derived no benefit from it, because the blood entered it, and occasioned a convulsive cough, which hindered the cannula from keeping in its place. The cafe appeared fo urgent, that M. Virgili determined to divide the trachea longitudinally down to the sixth ring; and he then made the patient lean forward. The blood soon ceased, and the surgeon was enabled to place in the wound a plate of lead, pierced with several holes, and provided with two shoulders, very much like what Bellotto employed in the treatment of the wound after trepanning. The next day the fever was diminished, and deglutition easer. M. Virgili suspected that the patient would be able to breathe without the affistance of the plate, and he therefore removed it. His hopes were not deceived. The only thing which remained to be done, was to bring the edges of the wound together, and endeavour to heal it, which was accomplished in a few days.

Garengeot states, that in separating the flerno-thyroidei muscles, the thyroid glands are separated, a circumstance which produces a risk of cutting them in the centre, and of wounding a great many of the vessels which are either distributed upon them or the adjacent parts, so that the blood running into the trachea, the operation must be useless. He allows that it is necessary to operate thus upon persons who are inclined to be fat; but in order to avoid so great an inconvenience, when the patients are thin, and the interface betwixt the third and fourth ring of the trachea has been felt with the index-finger of the left hand, and the place marked, Garengeot recommends introducing a lancet into the trachea at once, before the finger has been removed. The lancet is then to be moved gently towards each side, fo as to enlarge the opening. A flat tube is afterwards to be introduced, the fides of which are furnished with narrow ribbands. In this manner, the vessels of the trachea are alone cut, and these are small and of no consequence, so that there is less danger of blood flowing into the wind-pipe: Garengeot adds, that tracheotomy was in his days accounted a dangerous operation, and that there were few who had practised it, or who mentioned their having done it with success. This want of success appeared to him to be less ascribable to the operation itself, than to its having been undertaken too late. Such was also the sentiment of M. Louis, who infists upon the necessity of having recourse to it as soon as the suffocation appears at all urgent, so as to prevent the effusions in the lungs and brain, always brought on by an extreme difficulty of respiration.

Garengeot’s method was not original, since it had been described by Dionis. It has also some resemblance to Decker’s mode of operating, which consisted in opening the trachea through the integuments, without exposing this canal by a longitudinal incision, in the usual way. Sharp records a cafe, which confirms the inconveniences which have been attributed to it. A patient, who was in great danger of dying suffocated, was operated upon in the preceding manner. The motion of the wind-pipe in respiration soon separated the opening in the trachea from that in the skin, and occasioned the utmost difficulty in introducing the cannula, and keeping it in its place. Sharp rightly infers from this fact, that it is absolutely necessary to produce a longitudinal incision, and make it of sufficient size. Platner likewise recommends this incision of the skin, after which, he says, the trachea may be opened with a lancet, or with an instrument analogous to what is employed for tapping. But though this method seemed to him the most expeditious, he deemed it too late.

It does not appear to Sabatier, however, in what it is more objectionable than the other. On the contrary, he thinks that it has the advantage of preventing bleeding into the trachea, because the cannula immediately fills the opening made in this tube. Platner cites a cafe, which is recorded in the Philosophical Tracts, and which the celebrated commentator upon Boerhaave has also quoted. Authors who had mentioned the cannula which was to be introduced into the trachea, had contented themselves with stating, that it ought not to be too long, lest it should injure the posterior side of that canal. Garengeot conceived, that the dimensions of the instrument might be determined with more precision, and he calculated that its length should be about twenty-seven millimetres. Dr. G. Martin, the author of the cafe to which we have alluded, found this length insufficient, and he was even obliged to use the cannula of a trocar for the paracentesis of the abdomen, instead of what he was first about to employ; but as it was too long, he was under the necessity of making it pass through an aperture made in a thick linen compres.

It has been apprehended, that the extraneous substanccs in the air may pafs through the cannula into the lungs, and, consequentle, it has been recommended to cover the mouth of the instrument with a bit of sponge, cotton, or gauze. But Dr. Martin did not find this precaution necessary. He thinks it more useful to warm the air which the patient breathes, so that the lungs may not be hurt by it. There is one serious inconvenience which experience taught him, and which arises from the mucus discharged from the lungs. By this the cannula becomes fo obstrueted, that its presence affords no assistance. Dr. Martin was several times compelled to take out the tube in order to clean it. He received a suggestion, that he might employ a double cannula, that is to say, two cannules, one within the other, fo that the internal one might be withdrawn as often as necessary, without disturbing the outer one, into which it could be easily put again. In this manner, a free respiration would be assured; but Sabatier conceives, that a thick tube would be difficult of introduction. He also doubts whether the tube, of which all practitioners have spoken, is indispensably requisite. When the trachea, or larynx, is opened in wounds of the neck, the air makes its escape with force, and the circumstance needs to be checked by inclining the patient’s head forward, and confining it in this posture with bandages. Meyfionnier, who wrote towards the conclusion of the seventeenth century, and who practised tracheotomy three times, put no leaden cannula in the wound. He contented himself with applying dry lint, a pledge, and bandage. Sabatier notices, that these cafes are detailed too briefly. They prove, however, that the cannula may be dispensed with, and that the making of an opening in the trachea will enable the patient to breathe.

Van Swieten, as well as Platner, rejects the plan of opening the trachea with a trocar. His reason was, because the point of this instrument being thick and short, it was difficult to make it penetrate without using a great deal of force, especially in consequence of the great meseableness of the part on which it has to act. The trials which he made of this method, both on the dead subject and on living animals, convinced him that it was difficult, and that there was danger
in the event of the trocar slipping. This risk may be avoided by fixing the trachea well, and particularly by using some instruments, which were invented by Bauchot, an old surgeon-major of the French navy. They consist of a cutting blade mounted on a handle, to which is adapted a flat cannula, the opening of which has a rim furnished with two small rings, and of a kind of steel crescent, which served to fix the trachea, and as a conductor to the first instrument, which was called the bronchotome. Bauchot employed these instruments successfully upon two persons attacked with quinsey, and threatened with suffocation.

It may be concluded from all which has been said, that the operation of tracheotomy, which is also named bronchothomy, and laryngotomy, may be successfully practised, when patients are in danger of suffocation in cases of inflammatory quinsey; when respiration is obstructed by the lodgment of a foreign body in the oesophagus, which body can neither be extracted, nor pulled down into the stomach; and when an extraneous substance has fallen into the wind-pipe. In quinsey, and in cases of foreign bodies lodged in the oesophagus, the operation consists in making an opening, through which the air can enter to the lungs. In the case of a foreign body in the trachea, an incision is required, which divides longitudinally several of the cartilaginous rings of this tube, which is of a size proportioned to that of the substance to be extracted.

When merely an opening is required for the passage of the air, the surgeon may proceed in several different ways. In the oldest method, the patient was placed in the recumbent posture, with his head supported on pillows, so that the skin of the front and lower part of the neck could be pinched up into a transverse fold, of which one end was held by an attendant, the other by the surgeon himself with his left hand. This fold was divided from above downwards, and the incision was continued from the lower part of the larynx to the front of the upper edge of the sternum. The cellular substance between the sternothyroid and sternothyroidei muscles, was next divided down to the fore-part of the thyroid gland and trachea. This canal being exposed, the surgeon puts his left-hand index-finger between two of the cartilaginous rings, and then passing along his nail the instrument of which he has made choice, he makes a transverse incision in it. When he judges a cannula indispensible, Bauchot's instrument is the belt, the perforating part of which should be taken out immediately the trachea is divided, so as to leave only the tube, which is to be fixed in its place with suitable ribbons passed through the little rings.

In this manner, there is no risk of blood falling into the trachea, because the wound is filled by the instrument with which it is made. If, on the contrary, the tube be consider'd useless, the surgeon should use a lancet with rather a long point.

Instead of practising tracheotomy, or bronchotomy, surgeons have been recommended to perform the operation of laryngotomy, as more safe and easy. The lower edge of the thyroid cartilage, and the upper edge of the cricoid cartilage, are connected together by a thick ligamentous membrane, covered in front merely by the integuments. This anterior part of the crico-thyroid membrane is also immediately opposite the highest and broadest portion of the cavity of the larynx, directly below the glottis, so that it is not only easy to bring it into view by a superficial small cut through the skin and cellular substance, but the incision may be made longitudinally, by which its union will be facilitated, and there can be no risk of hurting the opposite side of the larynx. In France, this mode of operating has had several distinguished advocates, and the celebrated Vie-d'Azyr com-

TRACHICHTHYS, in Ichthyology, a genus of fishes, first described by Dr. Shaw in the "Naturalist's Miscellany," the characters of which are as follow: head rounded in front; eye large, mouth wide, toothless, deciduous. Gill-membrane furnished with eight rays, of which the four lowermost are rough on the edges. Scales rough; abdomen mailed with large carinated scales. There is one species: viz.

T. AUSTRALIS, or Southern Tr. With mailed abdomen; a native of the coast of New Holland. Its colour is a bright pink-ferruginous, or fair reddish-brown. The middle part of all the fins of a deeper colour than the rest of the animal, and the edges lighter, or of a yellowish tinge.

TRACHIDNA, a name given by Jovius and some others to the draco marinus of the old authors, called by us the "scarecrow." TRACHINIA, in Ancient Geography, a canton of Thessaly, in the Phthiotides, near mount Oeta. It is also called Melide. In this country was the town of Heraclea, first called Heraclea Trachiniae. Thyctides.

TRACHINÆ PETRÆ, high and inaccessible rocks which bordered a plain near the Malia gulf. They surrounded the Melide. Between these rocks and the sea flowed the river Melas, whence the territory had its name.

TRACHINUS, in the Linnean system of Ichthyology, the name of a genus of fish of the order of the Juguilares: the characters are, that the head is compressed and not smooth: the membrane of the gills has five rays, and the lower lamina of the operculum is serrated; and the anus is near the head. Linneus mentions one species, viz. the Draco. Artedi refers the Uranopterus also to this genus.

The name is originally Greek, the word τραχίνως signifying rough, sharp, or prickly. It was given to this fish from the
the rays of its back-fin being remarkably rigid, and sharp like prickles.

Trachinus Lapis, in Natural History, a fish mentioned by the writers of the middle ages, as possessing many great medicinal virtues. It seems to have been a kind of lapis nepriliteus, being described as bright, but not transparent, and being of two kinds, the one blackish, and the other green.

Trachis, in Ancient Geography, a town of Thessaly, said to have been built by Hercules at the foot of Mount Oeta, towards the mouth of the river Alorus. It derived its name from its mountainous and rugged situation. On the site of this town, which is mentioned by Homer, the Lacedaemonians built another, to which they gave the name of Hercules.

Trachoma, (from τραχύς, rough), a roughness of the inner surface of the eyelids, caused by hardened mucus and scabs. It implies the same sort of disease as the Pteroplasm, which see.

Trachon, in Ancient Geography, a plain which bounded the territory of the king of the Cimmerian Bosporus, on the side of Scythia.

Trachones, the name of two hills situated beyond the town of Damascus, in Syria. Strabo.

Trachonitès Arabes, Arabs who inhabited Succa, at the foot of Mount Alphadamus. Ptolemy.

Tracht, or Tractin, in Geography, a town of Moravia, in the circle of Brunn; 21 miles S. of Brunn.

Trachurus, in Ichthyology, the name of a fish of the Scimber kind, called in English a sword, and by several authors, furca, furus, and acius marinus. See Scomber.

Trachurus Chalcodon, a fish given by Mr. Ray to a fish of the scimber kind, the scimber cordylus of Linnaeus, known among writers on these subjects by its Brabian name gavalaroéa.

Trachynotia, in Botany, a genus of grasses, so named by Michaux, from τραχύς, rough, and νοτία, the back, because the glumes are rough in that part. — Michaux Bot.-Amer. v. 1. 63. — This is the same with Limnetis of Richard and Perfoon, adopted by Pursh, v. 1. 25 and 59, referred to Triandra Monogynia, and thus defined.

E. Ch. Spike lateral-flowered; flowers imbricated in two ranks. Calyx of two valves; one smaller than the other. Corolla of two valves, pointless, compressed, keeled. Style elongated.—Three species are described.


These are very coarse harsh grasses; the last is laid by Clayton to have a rancid smell. We mention them here, because Linnetis is accidentally omitted in its proper alphabetical order. Which of the two above names is to be preferred, might require consideration; but we have already declared under Dactylis that we do not fee the necessity of dividing that genus. If otherwise, our British D. stricta, Fl. Brit. 110. Engl. Bot. t. 380. Knapp. Gram. t. 63, must be associated with the above three American species.

Trachys Mons, in Ancient Geography, a mountain of the Peloponnesus, in Arcadia. Paulyanias.

Tracing, in Husbandry, a term used by our planters for the method of preferring the maize, or Indian corn. This being a large grain, is apt to spoil, if not carefully preferred.

Some thrall out the corn as soon as the ears are gathered, and lay it up in holes of the earth, which are their granaries: but those who have not opportunities of doing this, trace it, that is, they leave it in the ear, and weave, or fallen together a great number of ears by the ends of the hufks: these traces of corn they hang up within doors, on such supports as will keep them from one another; and they will, in this manner, keep good the whole winter.

This is a method of our introducing; but their own, of burying the clean corn, was at least as good, and was the same practised by the Egyptians of old, and by all the wiflett nations of the East at this time. But whether we have improved their husbandry in this particular, or not, it is certain that we have greatly affihed them in the planting of this corn, which we do by the plough, instead of the troublesome method they had of doing it with the hoe. The manner of our planting it is this: we plough single furrows the whole length of the field, and at about six feet distance one from another; we then plough others across at the same distance, and then, wherever the furrows meet, the corn is thrown in; it is then covered either by the hoe, or by running another furrow behind it with the plough; and when the weeds begin to overtop the corn, they plough the spaces again, and by this means destroy and turn in all the weeds, and give the earth a flitting, that greatly affihes vegetation.

The famous method of horse-hoeing husbandry, so celebrated by Mr. Tull, in a book written on that subject, is no other than the bringing home this method of our American planters, on the culture of the maize, and applying it to our European corn. The Indians, and our planters, join in the method of raising a hill of earth round every stalk of the maize; and when the ground is poor, or out of heart, they bury two or three hufks, of a kind called by them the ailes, under every hill, and by this means they have a crop double to what would otherwise have been produced. The English have learned this manure from the Indians; and in New England, where they are near the fishing-stages, they bury the heads and garbage of the cods, which fucceed as well as the ailes, and colt nothing but the carriage.

The lands on which the maize or Indian corn has grown, are as well fatted for our European corn as if they had been laid fallow. The reason of this is, that the plants of the Indian corn standing at fix feet distance from each other, the far greater part of the ground has remained unoccupied, and at the same time has had the advantage of often ploughing to kill the weeds, which is a benefit equal to that of dung and reft. All this, though it tends to prove the doctrine of horse-hoeing husbandry not new, yet it strengthens the system greatly. Phil. Trans. No. 142.
TRACTIONS, Drawing, the act of a moving power, by which the moveable is brought nearer to the mover, called also attraction.

Traction, Line of, in Mechanics. See Wheels.

Tractoriæ, among the Romans, were diplomas or tickets given by the emperor to such as he sent into, or called out of, the provinces; by which they were entitled to the use of the public post, and to be maintained at the expense of the government.

Tractrix, in Geometry, a curve line, called catenary; which see.

Trade, Traffic, Commerce, the act, or, art, of dealing, buying, selling, exchanging, &c. of commodities, bills, money, &c.

For the origin, progress, &c. of trade, see Commerce and Navigation.

It is observed by Dr. Smith, that all wholesale trade, all buying in order to sell again by wholesale, may be reduced to three different sorts: viz. the home trade, the foreign trade of consumption, and the carrying trade. The home trade is employed in purchasing in one part of the same country, and selling in another, the produce of the industry of that country; and it comprehends both the inland and the coasting trade. The foreign trade of consumption is employed in purchasing foreign goods for home consumption. The carrying trade is employed in transacting the commerce of foreign countries, or in carrying the surplus produce of one to another.

The capital that is employed in the first kind of trade generally replaces, by every such operation, two distinct capitals, that had both been employed in the agriculture or manufactures of that country, and thereby enables them to continue that employment. When it sends out from the residence of the merchant a certain value of commodities, it generally brings back in return at least an equal value of other commodities. When both are the produce of domestic industry, it necessarily replaces, by every such operation, two distinct capitals, which had both been employed in supporting productive labour, and thereby enables them to continue that support.

The capital employed in purchasing foreign goods for home consumption, when this purchase is made with the produce of domestic industry, replaces, too, by every such operation, two distinct capitals; one of which only is employed in supporting domestic industry. Though the returns of the foreign trade should be as quick as those of the home trade, the capital employed in it will give but one-half the encouragement to the industry or productive labour of the country. But, in fact, the returns of the foreign trade are very seldom so quick as those of the home trade; the former coming in before the end of the year, and sometimes three or four times in the year; and the latter seldom coming in before the end of the year, and sometimes not till after two or three years. The capital, therefore, in the home trade will sometimes make twelve operations, before a capital employed in the foreign trade of consumption has made one. If the capitals are equal, therefore, the one will give twenty-four times more encouragement and support to the industry of the country than the other.

That part of the capital of any country which is employed in the carrying trade, is altogether withdrawn from supporting the productive labour of that particular country, to support that of some foreign countries. And though it may replace, by every operation, two distinct capitals, yet neither of them belongs to that particular country. See the illustration of these principles in Smith's Wealth of Nations, vol. ii. p. 60, &c. See Capital.

The offences against trade, considered in a legal view, are smuggling, or the offence of transporting wool or sheep out of this kingdom, to the detriment of its staple manufacture, (see OWLER,) fraudulently importing, &c. of commodities, bills, &c. See Trade. See also the two following articles.

Trade, Balance of. See Balance.

Trade, Board of. See Board.

Trading Society. See Society.

Trade-Winds, denote certain regular winds at sea, blowing either constantly the same way, or alternately this way and that; thus called from their great use in navigation, and the Indian commerce.

The trade-winds are of different kinds, some blowing three or six months of the year one way, and then the like space of time the opposite way; these are very common in the Indian seas, and are called monsoons; which see.

Others blow constantly the same way; such is that general wind between the tropics, which off at sea is found to blow all day long from east to west. For the phenomena of each, with their physical causers, see Wind.

Dr. Lifier has a conjecture in the Philosophical Transactions, No. 156, that the tropical or trade-winds arise, in great part, from the daily and constant exhalations of a salt plant, called the farfosa, or lanica marina, which grows in vast quantities from $36^\circ$ to $18^\circ$ north latitude, and else-where upon the deep-sea isles. For the matter of wind, coming
coming from the breadth of one only plant, must needs be constant and uniform; whereas the great variety of trees and plants at land furnishes a confused mixture of winds. Hence, he adds, it is, that these winds are briskest about noon; the sun quickening the plant, and making it to breathe faster, and more vigorously. Lastly, the direction of this wind of east to west, he attributes to the general current of the sea; for a gentle air is observed to be constantly led along with the stream of the river: not much it is omitted, that every plant is, in some manner, an heliotrope, and bends itself, and moves after the sun, and consequently emits its vapour thitherward: so that the direction of the trade-wind is, in some measure, also owing to the course of the sun.

Dr. Georden has another hypothesis: the atmosphere, which surrounds the earth, and moves along with it in its diurnal motion, he supposes to keep pace with it; that part of it, at least, which is near the earth, if the remotest part should be judged to lost ground.

If then, there were no changes in the atmosphere's gravity, it would always go along with the earth from west to east in an uniform motion, altogether unsensible to us; but the portion of the atmosphere under the line being extremely rarified, its force expanded, and so to its gravity; and pressure much less than the neighbouring parts of the atmosphere, it is incapable of the uniform motion towards the east, and must, therefore, be pressed westwards, and make the continual breeze from east to west, between the tropics.

TRADESCANT, John, in Biography, one of the fathers of natural history in England, having been the first who made any considerable collection of natural productions, (see Museum,) as well as one of the earliest cultivators of exotic plants in this country, is represented by Lathbury Wood to have been a Dutchman. His name interchanged appears to be English, and was originally of two syllables, Tradescant, though it subsequently became Trasdescant, as appears by a line in his family epitaph,

"__

Lae John Tradescant, grandiflora, iun.

Dr. Pulteney thinks he was not settled in England during the life of Graves, though often mentioned in the second edition of that author's Herbal, by its editor Johnston, as well as in Parkinson's Works. He is recorded to have been for a considerable time in the service of the lord-treasurer Sackville, and Lord Wooten. He travelled into various parts of Europe, even as far Russia, and was on board a fleet against the Algerines in 1622. He brought home plants and other curiosities from those various excursions, but it does not appear what was his primary object. About the year 1635, he obtained the title of gardener to King Charles. About that time, or before, was settled at Lambeth, where his own garden was situated. Some remains of this were traced out by Mr. William Wotton 120 years afterwards. Tradescant's Ark, or Museum, became very famous as a collection of natural rarities. It was much visited by the great, and even by the royal family, all of whom took pleasure in examining it, as in later times their descendants have done to other such collections. A catalogue of the Museum Tradescantianum, in 1697, appeared. It contains the portraits of the owner and his son, engraved by Rys eldest; of which however most of the copies are diminished by mere print collectors, curshing the value of any thing beyond their own object. By this catalogue, the museum appears to have been furnished, not only with herbs, quadrupeds, fishes, shells, insects, minerals, fruits, &c., but also with warlike instruments, haberd, utensils, coins, and medals. There is annexed a catalogue in English and Latin of the plants cultivated in the author's garden. His portrait represents him as greatly advanced in age at this period; but the time of his death is not known. His son, of the same name, visited Virginia, and returned with several new plants; amongst others the original Tradescantia, hereafter mentioned. This son inherited his father's collections, and dying in 1662, bequeathed them to Mr. Elias Ashmole, so that they may be said to have laid the foundation of the Ashmolean Museum at Oxford, in which they, like the name of their original owner, are now sunk. The widow of the younger Tradescant, the mother probably of the grandson mentioned in the epitaph, is said to have carried the curious and rather splendid taste, remarkable for its allusive decorations, which still exist in Lambeth church-yard. See Dr. Dunciarell's account of this monument, in the thirty-third volume of the Philosophical Transactions. Pulteney's Sketches of Botany.


Obl. Mr. Brown, by whose and Gartn. our observations we have endeavoured to improve the above generic characters, has most judiciously established a natural order of Compositae, as distinct from Jaffuret's Juncis, from which they are, as he says, very different in habit as well as structure. Indeed we were never able to conceive how any professed naturalist (who could allow of so strange an alliance, of plants that have so little in common, as the above-named order of the great French teachers. Now are we left surprised at the extraordinary assumption which will still call the beautiful delicate and transient corolla of their plants, a calyx, though as different and distinct from the real external pericarp, as in any flower whatever. But it is deemed that monococcous plants can have but one arrangement to their flowers, and that this one must be a calyx; though here they have manifestly two, of which the external one is, as usual, a flat-veined corolla. Mr. Brown indeed feels the necessity of calling their internal parts petals with Linnæus, though such phytology overtops the Jaffuret hypotheses. The genus before us consists of various species of herbs.
TRADESCANTIA.

aceous plants, some annual, others perennial, none of them natives of Europe. Their leaves are alternate, theathing, simple, entire, with parallel ribs. Flowers clustered, short-lived, usually purplish, differing from those of Commelina, (see that article,) in being regular, with almost universally six perfect anthers. Mr. Brown proposes to separate, into a distinct genus, certain species, the claws of whose petals are united, and whose two seeds, in each cell, are directed in a contrary manner, one upward, the other downward. The fear of these seeds, moreover, is said to be at the base, their embryo at the opposite extremity. In this predicable are T. axillaris, crista, and some unpublishe species.

We proceed to augment Willdenow's list with some new species, most of which recently published by Mr. Kunth, among the discoveries of those illustrious travellers Baron Humboldt and M. Boupland.

1. T. virginica. Common Virginian Spider-wort. Linna. Sp. Pl. 411. Willd. n. 1. Ait. n. 1. Pursh n. 1. Curt. Mag. t. 12. Sowerb. Drawing-book t. 6. Redout. Liliac. t. 95. (Phalanquium euphemicum virginianum; Park. Parad. 152. t. 151. f. 4.) — Stem erect. Leaves lanceolate, smooth. Flowers numerous, in a sort of terminal sessile umbel. Calyx hairy. — This, the original species of its genus, was brought from Virginia by the younger Tradescant, (see that article,) before the year 1629, as appears by Parkinson's Paradisus; and is now one of the most common hardy perennials of every country garden, blossoming copiously throughout summer and autumn. Pursh says it occurs in flathy woods, from Pennsylvania to Carolina, flowering in May and June. The plant is readily increased, by parting its long fibrous roots, and thrives particularly well in shade and moisture. The petals are eighteen inches long, round, leafy, scarcely branched. Leaves sheathing, concave, taper-pointed, of a dark shining green. Flowers large, of a rich violet blue, each lasting but a day, or rather a few hours in the early part of a day, after which they roll up into a liquefying pulp mass; but there being a great number in each umbel, or tuft, there is a long succession. The fix golden anthers are brilliantly contrasted with the dark purple shaggy filaments.


3. T. flabesera. Roughish Spider-wort. Curt. Mag. t. 1597. Ait. Epit. 375. (T. cirrata; Walt. Carol. 119.) — Stem erect. Leaves ovato-lanceolate, recurved, rough-edged. Umbels lateral and terminal, many-flowered. Calyx hairy. — Native of North America, from whence it is reported to have been brought by Mr. Lyon in 1812. The plant is a hardy perennial with us, flowering from June to September, but has little superiority to claim over T. virginica, except what arises from novelty. The foliage is broader, and more divaricated, than that of this species, as well as wavy and roughish, especially at the edge. Flower-flanks reddish or purple, becoming wrinkled as the flowers fade.

4. T. crassifolia. Thick-leaved Spider-wort. Cavan. Ic. v. 1. 54. t. 75. Willd. n. 2. Kunth n. 5. Curt. Mag. t. 1598. — Stem erect, woolly. Leaves ovate, coriaceous; silky at the margin and under side; with very short teeth. Umbels terminal, hairy. — Native of New Spain, flowering in September. A flowe plant in England, introduced by the late marchioness of Bute. The root is tuberous, perennial. Mr. Ker Bellenden describes the stem as procumbent, but by every other account it is erect. The broad thick ovate leaves, densely silky with white hairs at the margin, as well as beneath, distinguishes this species from all the foregoing. The flowers are of a pale violet, expanded but for three or four hours in a morning; their size equal to our first and third species. Calyx hairy.


— Native of the elevated plains of Mexico, near Chapotepec, flowering in May. Perennial. Stem fruticat, sparingly clothed with white woolly pubescence. Leaves lanceolate-oblong, membranous, somewhat channelled, three inches long, hardly one broad. Stalks short, lax, fruticat, woolly at the edge. Umbels of about twenty flowers, whose flanks are divaricated, round, hairy, near an inch long. Calyx tipped with purple. Petals thrice its length, purple, combined at the base. Germin woolly. Style purplish, smooth. Kunth.


7. T. undata. Wavy Racemose Spider-wort. Kunth n. 7. Willd. Emm. 347. — Stem erect, with a hairy lateral line. Leaves oblong, acute at each end, wavy, rough on the upper side and margin, with fringed teeth. Clusters terminal, in pairs. — Native of the sloping sides of hills in Cumania, flowering in September. An annual plant, very nearly related to the last, but more tender, and with reddish-purple flowers.

8. T. Zanonia. Gentian-leaved Spider-wort. Swartz Ind. Occ. v. 1. 624. Willd. n. 4. Ait. n. 5. (Commelina Zanonia; Linna. Sp. Pl. 62. Redout. Liliac. t. 192. Campell Zanonia; Kunth 264. Zanonia graminea perioliata; Plum. Gen. 38. t. 38. Periclymenum rectum herbaceum, gentiane fioho, foli pediculo caulem ambi ente; Swayne Jam. v. 1. 243. t. 147. f. 1.) — Stem erect. Leaves elliptical, tapering at each end. Flowers capitate, on long, lateral, foliary flanks, jointed in the middle, with a pair of bracteae. Capsule clothed with the permanent pulpy corolla. — Native of woods in the West Indies and South America, flowering in autumn. A not unfrequent floweplant in Europe, though less remarkable for the beauty of its flowers, which are small and white, than for the peculiarity of its dark-purple juicy fruits, formed of the thickened and enlarged corolla, which completely invets the capsule. The root is perennial. Stem two or three feet high, mostly branched, smooth, juicy, leafy in the upper part. Leaves near a foot long, downy beneath, fringed at the base; often red at the edges; their stipules tumid, densely fringed. Flower-flanks opposite to each leaf, and nearly as long, with a sheath in the middle, and two ovate, spreading, leafy bracteas at the top, accompanying a head of eight or ten flowers.

9. T.
10. T. malabarica. Grafted-Leaved Spider-wort. Linn. Sp. Pl. 412. Willd. t. 6. Apt. n. 7. (Tali pullu; Rheedea Hor. Mal. v. 9. 125. t. 63.)—Stems erect, angular; hairy at one side. Leaves linear, channelled, recurved, clasping the stem. Flowers lateral and terminal, hairy, two or three together.—Native of the East Indies. Perennial, flowering in our flowers in June and July. About a foot high, with many slender, slightly branched, dense, moss leafy in their lower part, and small flowers. The calyx is hairy. Capsule exquisitely polined, as if varnished.

11. T. diversa. Spreading Spider-wort. "Vahl Edag. v. 1. § 54." Willd. n. 8. (Commelina hexandra; Aubl. Guin. 35. t. 12.)—Stems branched, trailing. Leaves ovate, somewhat flaked, smooth, with bearded sheaths. Panicles terminal. Filaments naked.—Found by Aublet about rivers in Cayenne and Guiana, flowering almost all the year. Root perennial. Stems rising to the height of ten feet, supporting themselves upon the neighbouring bushes. Leaves two or three inches long. Flowers blue, in compound clusters, or panicles. Their filaments are said to be smooth, white, and yellow.

12. T. pendula. Knotted Spider-wort. Linn. Sp. Pl. 412. Willd. n. 9. Apt. n. 8. Jacq. Amer. t. 64. (Ranunculus ran Dimensionum repens, parvifolia folia villosa; Plum. 1c. 156. t. 116. f. 2.)—Stem decumbent, with a hairy lateral line. Leaves ovate, flanked at the base and sheath. Panicles terminal, compound, capillary, nearly smooth.—Native of the West Indies, in shady moist places, flowering in our flowers about July and August. Root perennial. Stems slender; decumbent and creeping at the bottom; branched and leafy above. Leaves either above an inch in length, pointed, hairy, especially at the margin and base; their sheaths terminal, membranous, densely flanged at the border. Flowers small, white, in loose diversified panicles. Calyx smooth. Capsule pellucid, polished.

13. T. monandra. Small Monandrous Spider-wort. Swartz Ind. Occ. v. 1. 597. Willd. n. 10.—Stems diffuse, with a hairy lateral line. Leaves ovate-heart-shaped, smooth. Stalks axillary, many-flowered. Stamen foliary. —Discovered by the scrutinizing eyes of Dr. Swartz in bushy places on hills in the western part of Hispaniola, flowering from June to March. A delicate perennial herb, creeping by means of long fibrous radicles. The leaves are not an inch long, very smooth, pointed, finely renculated when dry, with pale fringed flowers. Flowers minute, white, in little axillary umbels. Calyx hairy. Stamen but one, slender, smooth.


16. T. procumbens. Procumbent White Spider-wort. Willd. n. 13. (T. multiflora; Jacq. Coll. v. 2. 266. T. Rac. t. 555.)—Stem procumbent, creeping. Leaves ovate, fringed at the base. Stalks axillary, many-flowered. Three of the filaments short and bearded.—Found in moist situations at the Curaccas. Flowers in the flower from August to December, and is perennial. Jacqui. This appears to be a much larger and floret plant than the preceding, the fringes being four feet long; their numerous flowering branches ascending. Leaves an inch and half or two inches in length, dark green, with ribbed sheaths. Flowers in many axillary, as well as terminal, many-flowered tufts, small and white; their three longer filaments only beard at the summit.

17. T. axillaris. Grafted-Leaved Axillary Spider-wort. Linn. Syn. Vég. ed. 15. 260. Willd. n. 14. (Commelina axillaris; Linn. Sp. Pl. 61. Euphorbe phalangoides madagascariensis minimum, secundum cranium quoddam utraque floridam Plak. Phys. t. 174. f. 9. Nit-pulli; Rheedea Hor. Mal. v. 12. t. 28. f. 15.)—Stem branched, decumbent. Leaves linear, acute; with short, fringed, tufted sheaths, which are longer than the axillary filaments.—Native of the East Indies. Root small, fibrous, annual. Stem much branched, decumbent, taking root at the joints, leafy, smooth, a foot long or more. Leaves graceful, smooth, from three to five inches in length, and one-third of an inch in breadth; their sheaths coloured, smooth, but strongly fringed. Flowers rather small, blue, slightly flaked, scarcely projecting beyond the sheaths of the leaves, not always solitary in our specimens. Calyx-ovaries lanceolate, but half as long as the tube formed by the united bases of the petals. Stamen according to Koch, six, with jointed hairs.

18. T. crenata. Crenated Spider-wort. Willd. n. 15. Apt. n. 9. Jacq. Hort. Vind. v. 2. 64. t. 157. (Commelina crenata; Linn. Sp. Pl. 62. Barm. Ind. 18. t. 7. f. 2. Euphorbe crenata procumbens crenata; Herri. Parad. 128.)—Stem branched, decumbent. Leaves lanceolate, reflexed. Spikes terminal, recurved, with imbricated crenate-shaped bractea.—Native of Ceylon; introduced to Kew in 1770 by M. Richard. It is annual, flowering in the dove from July to September, and is remarkable for its long-stalked bearded recurved spikes, of pretty little bright blue flowers, whose five filaments are all bearded at the summit. The habit of the herb is like the last, but with shorter, broader, and blunt, deflexed leaves.

Spikes terminal, with three clasping bracteae.—Native of the East Indies. Burmann’s figure indicates a very distinct species from the leaf, with longer and linear leaves. Each spike moreover seems completely enfolded in one large external bractea. Yet the Linnean specimen, from the Upal garden, appears scarcely different from T. crista, as Linneus himself suspected. He says the flowers are violet, not sky-blue. Those who poetros both plants, in a living state, can alone clear up the uncertainty which envelops these species.

20. T. gracilis. Slender Purple-veined Spider-wort. Kunth n. 1.—“Stem branched, procumbent. Leaves ovate, acute, fringed as well as their lax sheaths. Umbels terminal, aggregate, on downy stalks. Calyx coloured, rather downy.”—Native of the cooler regions of Quito, near Tarqui and Chillo; perennial, flowering in February. Stems smooth, a foot long. Leaves thickish, eight or nine lines in length. Umbels three or four together, with about seven flowers in each, whose corolla is white, veined with purple. Stamens hairy at the base. Cells of the anthers widely separated.

21. T. albula. Weak White Spider-wort. Kunth n. 2.—“Stem erect, weak, nearly simple. Leaves ovate-oblong, acute, fringed as well as their lax sheaths. Umbels solitary or in pairs, on smooth stalks. Calyx hairy at the summit.”—Found with the last, to which it is confusedly nearly akin; but the leaves differ somewhat in shape, and the umbels consist of ten or twelve flowers, whose calyx is green, and their petals pure white.

22. T. pulchella. Dwarf Purple Spider-wort. Kunth n. 3.—“Stem procumbent, branched. Leaves ovate-oblong, pointed, smooth; rough with minute ferratures at the margin. Sheaths lax. Umbels in pairs, on smooth stalks. Calyx gibbous at the base, smooth.”—Native of a temperate climate, on the Mexican mountains, between Guanacuato and Santa Rosa de la Sierra, flowering in September. — Root perennial. Stem six inches or more in length, round, smooth, sometimes simple. Leaves an inch and a half long, membranous, with about thirteen ribs. Umbels terminal, of about nine purple flowers. Calyx-leaves linear-lanceolate, blunt, gibbous at the base. Capsule oblong, smooth, of only two cells, with solitary seeds, rough with dots.

23. T. biflora. Hairy Procumbent Spider-wort. Kunth n. 4.—“Stem procumbent, branched. Leaves oblong-lanceolate, pointed, rough-edged, waved, beneath hairy, as well as their lax sheaths. Stalks three or four-flowered, terminal, in pairs, hairy like the slightly coloured calyx.”—Native of the cooler mountains of New Granada, near San Miguel on the banks of the river Putes, Teindala, and the village of La Cruz, flowering in November. The root is perennial. Stem two or three feet long, round, fringed, smooth. Leaves rounded at the base, flat, with about nine ribs, an inch and a half or more in length, four lines broad; their upper surface nearly smooth. Sheaths pellucid, fringed, half an inch long. Calyx-leaves lanceolate, acute, purplish-green. Petals twice as long, purple. Filaments red, hairy at the base.

24. T. formosa. Tall Cape Spider-wort. Willd. n. 15. (T. formosa; Linn. Suppl. 192. Lamarck n. 9. T. no- diolora; Lamarck n. 6, according to Willdenow. Commelinia formosa; Thunb. Prodr. 88.)—Stem erect, zigzag. Leaves opposite, combined at the base.—Found by Thunberg at the Cape of Good Hope. The stem is two feet, or more, in height, round, smooth, except a little woolly line at each side, running down from the joints. Stem-leaves opposite, awl-shaped, keeled, from two to four inches long, rather woolly at the margin, inserted in pairs to a tumid, entire, woolly or hairy sheath, about half an inch in length. Flowers in dense, axillary, aggregate heads, with lanceolate bracteae; the lower heads stalked. Leaves of the calyx lanceolate, keeled, combined at the base. Filaments very hairy. Style bearded at the upper part. Willdenow seems, in transferring from the Supplementum, to have written the name formosum by mistake for speciosa. The latter being now applied to a different species, see n. 5, we retain the former here. Lamarck might possibly have inferred the same plant twice, once after Linnaeus, without seeing a specimen.

The most singular circumstance in the botanical history of Tradescantia relates to what Linnaeus has named T. nervosa, Mant. 223. Willd. n. 7. This proves, by the original specimen from Mutis, accompanied with a drawing, to be a very curious plant of the Orchis family. Mutis justly remodelled with Linnaeus against making it a Tradescantia, and called it an Epidendrum. Mr. Kunth, who has seen our specimen, informs us it belongs to a new genus, and is named by him Thylochiton aquifolius. The style, or column, is excessively hairy, or rather bristly. The lip is very little broader than the two petals, all of them being marked with numerous parallel ribs. The whole flower is above an inch wide, and seems to be very handsome.

Tradescantia, in Gardening, furnishes a plant of the hardy herbaceous perennial kind, the species of which that is chiefly cultivated, is the common Virginian spider-wort, or flower of a day; but there are other species that may be cultivated. And there are varieties with pale blue flowers, with deep blue flowers, with white flowers, with red flowers, and with purple flowers.

Method of Culture.—They are readily increased by parting the roots, and planting them out in the autumn, or early in the spring, in a bed or border of common earth. And also by seeds sown at the same seasons in similar situations, the plants being pricked out into other beds in the summer, and removed in the autumn to the places where they are to grow. These plants are durable in the roots, but the stalks decay annually: they mostly breed forth a new flower every day, hence the common name, during some weeks in the summer season, and are proper for planting out in various places in pleasure-grounds.

They afford ornament in the common borders among other flower-plants.

Trade-water, in Geography, a river of Kentucky, which runs into the Ohio, N. lat. 37° 17'. W. long. 88° 30'.

Tradita Nexu. See Abalination. Tradition, Tradition, the act of delivering a thing into the hands of another. The sale of a moveable is completed by a simple tradition.

Tradition, in Matters of Religion, is applied to those laws, doctrines, relations, &c. which have been handed down to us from our forefathers, without being written.

Taking tradition in this sense, for every thing relating to faith, or the rites and ceremonies of religion thus derived down to us from the primitive church, there are two kinds, viz. apostolical and ecclesiastical tradition.

Tradition, Apostolical, which is what we properly call tradition, is defined by the Romanists to be the unwritten word of God, descended from the apostles to us, through a continual succession of the faithful.

By this tradition, say they, it is, that the Holy Scriptures have been kept entire, both as to the letter, i.e. the text, and as to the spirit or sense thereof. This tradition the council
council of Trent declares to have the same authority with the Holy Scripture itself, and pronounces every one who rejects it an heretic.

It is a question of some difficulty, when the church of Rome began to derogate from the authority of the Scriptures, and to raise these traditions to an equality with them. It is generally supposed, that pope Nicholas ordained, that the declaral epistles of the popes should be of the same authority as the Scriptures, about the year 835. Du Plessis (Myth. Inq. Progr. 31.), indeed says, that pope Agatho had, 170 years before, pronounced openly, that all decrees made by the bee apostolic, ought to be received as if they had proceeded from St. Peter's own mouth. But as this doctrine had gained no canonical authority in the pontificate of Nicholas, it ought not at so early a period be placed to the account of the church. Nor did that diligent inquirer find any formal decree to such effect till the year 1415, when the council of Constance, in the condemnation of the 38th article of Wickliffe's heresy, ordained, that such of the declaral epistles as should be found upon examination to be rightly ascribed to the popes whose names they bore, should be of equal authority with the epistles of the apostles. (L'Enfant's Hist. Council of Constance, vol. i. p. 229.)

From this period, the sufficiency of the Scriptures alone to salvation became a formal heresy, as appears by the 12th of the interrogatories exhibited to Lambert with Fox's Martyrology in the year 1538. Hitherto, however, the Scriptures stood upon even ground with papal constitutions; and the inconformities between them were kept sufficiently out of sight, by depriving the people of the ordinary means of studying the sacred oracles, and entertaining them only with the ignorant and mystical comments of the monks upon them. When these would no longer pass upon mankind, it then became necessary to degrade the Scriptures to an inferior class.

Traditions, Ecclesiastical, are certain statutes and regulations regarding the rites, customs, and circumstances of religion, introduced since the time of the apostles, by councils, popes, &c. and continued to our time through a constant observance of the church.

The Romanists make another division of tradition, viz. into written and unwritten.

Tradition, Written, is that of which we find some traces in the ancient fathers and doctors.

Tradition, Unwritten, is that of which there appear no signs or specks in any of the fathers extant.

The church of Rome pretends to be the depositary of each kind; tradition the holds to be absolutely necessary in the church, grounding this necessity on the promise of inaffilibility which Jesus Christ is pretended to have made her.

Yet others of that communion deny tradition, how excellent forever it may be for the reclaiming of heretics, to be absolutely necessary; maintaining, that the church would not be less inaffilible, nor less the rule of doctrine, &c. if the fathers had never written at all.

Traditionary, Traditionaries, a name given among the Jews to such of them as acknowledge tradition, follow it, and explain the Scriptures by it: in opposition to the Caraites, who refuse any thing but the pure Scriptures themselves.

The traditionaries are what we more usually call rabbis, and rabbinitis, or talmudists. Hillel shone among the traditionaries, and Shimma among the texturaries.

Traditors, a name given in the first ages of the church to such Christians as, in times of persecution, to avoid death and martyrdom, delivered up the sacred writings to the persecutors.

"The enemies of religion, even under the old law, made their utmost efforts to deprive the world of the Holy Scriptures; in that cruel persecution which Antiochus raised against the Jews, the books of the law were very licentiously sought after, torn, and burnt, and such as kept them were put to death; as we read in the first book of Maccab. ch. i. vs. 56, 57.

Diocletian reversed the same impolicy, by an edict published in the nineteenth year of his empire, commanding all the sacred books to be brought to the magistrates, and burnt.

Many weak Christians, and even some bishops, overcome with the fear of punishment, carried in their books to the persecutors, which the church detesting, made very severe laws against them, and gave them the infamous names of traditores, from tradere, I deliver, betray.

As the great pretence of the feichism of the Donatists was, that the Catholics tolerated the traditores, it was decreed in the council of Arles, held in 314, that such as should be found guilty of having delivered up any of the holy books, or vesels, should be deposed from the order of the clergy, &c.

Traducian, Traducianum, a name which the Pelagians anciently gave the Catholics, because of their teaching that original sin was transmitted from father to children, or that it was communicated to the children by the father in the way of generation.

The word is formed of the Latin tradus, which was made use of to express that communication; and which comes from traduo, I transmit, or propagate from one to another.

At present, some give the appellation traducianum, to such as hold, that the souls are transmitted to the children by the father.

Traduction, formed of trans, beyond, and ducere, I lead, draw; the act of translating, or turning out of one language into another. See Translation.

Traeth Buchan, in Geography, a bay of the Irish sea, on the west coast of Wales, in the county of Merioneth; 2 miles N. of Harlech.

Traeth Cwb. See Redwhare Bay.

Traeth Mucor, a bay of the Irish sea, on the west coast of Wales, between the counties of Merioneth and Caernavon; 4 miles N. of Harlech.

Traetta, Tomaso, in Biography, a Neapolitan composer of the first class during the last century. We have a very spirited and accurate account of the rapid progress of this master to the temple of Fame. in M. Laborde's "Effai sur la Musique," drawn up, we believe, by the animated and discriminative pen of count Benincasa; who says that, "Traetta, one of the last disciples of Durante, quitted the conservatorio at the age of twenty-one, and two years after he was chosen to compose an opera for the great theatre royal of San Carlo, at Naples, entitled "Farmace." His successes in this first attempt was so great, that he was employed in the same city to compose fix other operas, serious and comic, succissively.

"The reputation of this young composer soon reached Rome, whither he was invited, and composed for the Albartii theatre "Ezio;" which, though it had been previously set by so many great matters, that of Traetta was, and is still, the most esteemed. All the great theatres of Italy now wished to engage him, and he composed for them all more than once, till he was fixed in the service of the court of Parma, in the splendid reign of Don Philip, where he had the honour of instructing in music the late archduchess, consof of the emperor Joseph II., and the princeps of Austria.
The operas which he then composed at Parma were entirely in the French taste, which was that of the court. The choruses and the ballets are not yet forgotten. It is this totality that unites the charms of all the fine arts together.

The Italians have long known and applauded such splendid spectacles, and often exhibited them successfully in the last and preceding century; but with them the occasions cannot be frequent. A great capital, like Paris, is necessary, which constantly furnishes an audience and spectators able to pay for their amusements all the year round; or magnificent courts, such as those of the princes of the house of Este, Medici, Parma, and Florence, in former times.

"The first of the six operas which Traetta composed in this style, was 'l'opitoto e Aricia,' written by the famous poet, the abate Frugoni, in 1759. At this period Traetta was twice called to Vienna to compose 'Arminia' and 'Ingenia,' two grand operas with choruses and ballets, which were crowned with the greatest succcess. (This was five years previous to the performance of Gluck's "Orfeo" at Vienna.)"

"These two operas were afterwards represented at Milan, Florence, Mantua, and Naples. After the decease of the infant Don Philip, Traetta was called to Venice, where he was appointed maestro to the conservatorio of l'Opipidetto; but he could not there refit the proposals made to him from all parts of Europe. After two years' residence at Venice, he suffered himself to be attracted to Petersburg, where he was engaged for five years; at the end of which period he was detained two years longer, during which periods he composed many operas, and many cantatas."

England wished to have him in its turn; but he arrived too late; his health was so impaired, that it seemed never to have enjoyed a day's ease and comfort while he was there. And Sacchini, who was still in London, had taken such possession of our hearts, and so firmly established himself in the favour of the public, that he was not to be supphanted by a composer in the same style, neither so young, so graceful, nor so fanciful as himself.

Sacchini's person and address had contributed towards endearing him to the English; but, on the contrary, Traetta's countenance and general appearance were so chilling as to be almost frightful. A skin extremely adult, a settled gravity, discontent and gloom covered his visage so contently, as to make a beholder shrink at the sight of him, and imagine it impossible that anything pleasing, even to capture, should flow from its matter. But all this only proves that Horace, who says, "Fronti nulla sines," was a much better phylognomist than Lataver.

Though many excellent songs and scenes of his composition had been introduced in pafficino operas on our stage, yet we can remember but two entire dramas of this matter that were executed here, "Germando," a serious opera; and "La Serva rivala," a burleque. But the dramas which he composed in and for different parts of Europe, much amount to more than fifty.

On quitting England, he returned to Italy in an alarming state of health; however, we find that, in 1778, he produced two operas there: "La Disfatta di Dario," and "Il Cavaliere Mante;" but 1779 was the last year of this admirable musician's existence.

TRAFAGNOL, in Geography, a river of Germany, in the county of Tyrol, which runs into the Lavis, 4 miles N. of Caifersier.

TRAFALGAR, Cape, a cape of Spain, on the coast of Andalusia; about 60 miles E. of Cadiz. N. lat. 36° 10'. W. long. 6° 8'. This cape has been rendered famous by the complete victory obtained October 21, 1805, by the British fleet, commanded by lord Nelson, over the combined fleets of France and Spain off this cape. (See the biographical article of Nelson.) Among the Arabsians there is a tradition, that the province of El Garb, in Morocco (see Garb), was originally united to Trafalgar and Gibraltar, shut up the Mediterranean sea, from whichapsed into the Western ocean by a subterraneous passage: and at this day they call Trafalgar Trafel-garb, i.e. the piece or part of El Gar; and Gibraltar, Jibbel-taf, i.e. the mountain of the piece, or part of El Garb.

TRAFARIA, a fort of Portugal, in the province of Estremadura, on the south side of the Tagus; 6 miles S.W. of Lisbon.

TRAFFICK. See Trade and Commerce.

The word is formed from the French, trafic, and that from the Italian, traffico, which is again borrowed from the Arabic.

The principal traffic in Muscovy and the North is in furs and skins: the great traffic of the Dutch in the East is in spices: the traffic of money is mostly carried on at the Exchange.

TRAFINE. See Thepan.

TRAGACANTHA, in Botany, γκωκαςαδο of Dioscorides, book 3, chap. 23, is so called from τραγακας, a goat, and ακαςαδο, a thorn, probably because of its growing in mountainous situations, frequented by goats; or perhaps from being the food of those animals, to whom its thorny footstalks may fearfully prove any impediment. There are several species, allmost all confounded by Linneus under his Aftragalus Tragacanthus, but distinguish'd by Tournefort, as well as more recently by Willdenow, Lamarck and others. Three of them are deffined to appear in the Flora Graca. They all produce more or less of the mucilaginous substan-cce called Gum-Tragacanth, or Gum-Dragon, and are remarkable for their dense bulbous thorny habit, and copious, not inelegant, flowers. Tournefort, in his Corolla, p. 29, 35, has added nineteen Oriental species to the four mentioned in his Instituciones, p. 4.17; but these, though for the most part truly distinct, are some of them probably mere varieties, and are so considered by Lamarck; see his Dic-tionnaire de Botanique, v. 1. 1. 320; where these plants compose a secon of the genus Aftragalus, characterised by the permanent, Trident spinous, common footstalks of the leaves.

TRAGACANTHA, in the Materia Medica. The naked hillocks of mount Idæa, in Cadià, M. Tournefort tells us, produce much of the plant tragacantha, or goat's thorn, which gives the gum spontaneously towards the end of June, and in the following month; when the nutritious juice of the plant, thickened by the heat, hurst's most of the vessels in which it is contained.

This juice coagulates in threads, which make their way into the pores of the bark, where being pushed forward by new juice, they get through the bark, and are at length hardened in the air, either into little lumps, or into twisted pieces in form of little worms, more or less long, according to the quantity of the matter of which they are formed.

It should seem, too, that the contraction of the fibres contributes to the expresssion of the gum; those fine fibres, like the fibres of hemp, laid bare and tramped under foot by men and horoses, contract themselves, and facilitate the expression of the extravasated juice. The plant grows also in several places of the Levant, particularly about Aleppo.
M. de la Billardiere's account of the manner in which this gum is produced, differs in some respects from that of Tournefort. Having visited mount Lebanon in August, 1766, the season when this gum is collected, he found the species which afforded it to be different from that figured and described by Tournefort; and consequently not the tragacanth of Linnaeus. The stem of the Grecian *tragacanth* is blackish, that of Lebanon is yellow: the leaves of the first are downy, of the second smooth: the flowers of one are red, those of the other are of a pale yellow. Hence he infers that there are several species of *tragacanth* which produce gum-tragacanth. He also considers the situation of Tournefort, who attributes the flowing of the gum to the contraction of the thorns of the bark, occasioned by the intensity of the solar heat; observing, that it is only during the night, or when the sun is obscured by clouds, that the gum issues from the plant, and that the same has been remarked at Crete.

The gum is of different colours and qualities, some being white, some greyish, some reddish, and some almost black. The white is the best: it must be chosen clear, smooth, and twirled, or vermilion. It is dry, and yet somewhat soft to the touch.

Gum-tragacanth differs from all the other known gums in giving a thick consistence to a much larger quantity of water; and in being much more difficultly soluble, or rather dissolving only imperfectly. Ruty affirms, that in five or six hours it will disolve in cold water. Put into water, it slowly imbibes a great quantity of the liquid, swells to a large volume, and forms a soft but not fluid mucilage; with the addition of more water, a fluid solution may be obtained by agitation, but the liquor appears turbid and whity, and on standing the mucilage turbidizes.

It is smooth and softening, and is therefore good to obviate the acrimony of any humours; which makes it of service in such coughs as proceed from catarrh, and other defluxions of rheum. It is also very strengthening in some retaliation weaknesses, and is prevalent against the whites in women.

Tragacanth is usually preferred to the other gums for making up troches, and other such purporses, and is supposed likewise to be the most effectual as a medicine; but on account of its imperfect solubility, it is unfit for liquid forms. The dose is grs. x to 5j., or more. It is commonly given in powder, with the addition of other materials of similar intention.

The mucilage of tragacanth of the Edinb. Ph. is prepared by macerating one ounce of gum-tragacanth in powder, in eight ounces of boiling water for 24 hours, and filtering the gum so that it may be disolved, and straining the mucilage through linen. The mucilage of gum-tragacanth of the Dubl. Ph. is obtained by macerating two drachms of gum-tragacanth in powder, in eight fluid-ounces of water, in a covered vessel, until the gum is disolved, and straining the mucilage through linen. The compound powder of tragacanth of the Lond. Ph. is formed by taking of tragacanth powdered, acacia gum powdered, and starch of each an ounce and a half; and of refined sugar three ounces. Rub the starch and sugar together to a powder; then add the tragacanth and the acacia gum, and mix the whole together. This powder is used with effect as a demulcent in hectic fever, and to allay the tickling cough of catarrh; in gonorrhoea and strangury it is given combined with nitre, and in dyestery with ipecacuanha powder. The dose is from 5s. to 5j., mixed in water or any bland fluid.

**TRAGACANTHUM** *Plantagen Indicus*, in *Natural History*, a name given by some writers to the bird's-nets, which are famous in soups in China, and in some parts of Europe, for their cordial, restorative, and provocative virtues. They are the seeds of a kind of Indian sea-swallow, and are made up of a substance resembling gum-tragacanth, and, like it, melting in a jelly in any warm liquor.

**TRAGAEA**, in *Antiquary Geography*, a town of the island of Naxos, in which particular worship was paid to Apollo Trias.

**TRAGAN**, in *Geography*, a town of Africa, in Fezziu; 100 miles N. of Murrabook.

**TRAGARCH**, a river of Wales, in the county of Brecknock, which runs into the North Sea.


**TRAGASIAN SALT**, a term used among the ancients for a sort of sea-salt, very little different from the common kind, being made by the evaporation of the water of some salt-ponds near the sea-shores.

**TRAGAEA**, in *Pharmacy*, an aromatic powder grossly beaten and mixed with sugar; taken by way of carminative.

**TRAGAE, or TRAGUS**, in *Ancient Geography*, an island situated in the vicinity of the Cyclades.

**TRAGEE**, islands situated on the coast of Ionia, but they were joined to the continent by the depredations of the Meander. They served as a retreat for pirates, according to Strabo, and lay N. of the promontory Phocis.' E. of that of Troy, and W. of the town of Myrurus.

**TRAGEDY**, a dramatic poem, representing some signal action performed by illustrious persons, and which has generally a moral issue or end.

Accordingly, it has been always reckoned a more dignified entertainment than comedy. The former directs our attention to the high passions, the virtues, crimes, and sufferings of mankind; the latter to their humours, follies, and pleasures. Terror and pity are the great instruments of tragedy; and ridicule is the sole instrument of comedy.

Tragedy exhibits the characters and actions of men, says Dr. Blair, in some of the most trying and critical situations of life, and serves as a direct imitation of human manners and actions. It differs from the epic poem, in which the poet narrates and describes characters, by excluding the poet, and setting before us the personages themselves, acting and speaking what is suitable to their characters. As no kind of writing affords in great a trial of the author's profound knowledge of the human heart, none, when duly executed, has so much power to raise the strongest emotions. It is, or ought to be, a mirror, in which we behold ourselves, and the evils to which we are exposed; a faithful copy of the human passions, with all their direful effects, when they are suffered to become extravagant.

Arifito scientifically defines tragedy, the imitation of one grave and entire action, of a just length, and which, without the assistance of narration, by raising of terror and compassion, refines and purges our passions.

This definition has given the critics some perplexity; and Corneille declares he cannot reconcile Arifito with himself; the instances Arifito cites, he thinks, defeat his own definition. He even denies the purging of our passions to be the end of tragedy.

Our English authors are more favourable to the definition; by the purging of our passions, they understand not the extinguishing of them, but the reducing them to just bounds; for by drawing the sufferings that attend a subject to us, we are taught to examine them more narrowly; and by seeing the great misfortunes of others, it2 minimizes the fate of our own.
The ingenious writer already cited, disapproving the statement of Aristotle with regard to the design of tragedy as somewhat obscure, thinks its intention may be more shortly and clearly defined, "to improve our virtuous sensibility." If an author interests us in behalf of virtue, forms us to compassion for the distresses, inspires us with proper sentiments, on beholding the vicissitudes of life, and by means of the concern which he raises for the misfortunes of others, leads us to guard against errors in our own conduct, he accomplishes all the purposes of tragedy. Tragedy is, therefore, a moral species of composition; and the impressions left by it on the mind are, upon the whole, favourable to virtue and good dispositions. In order to produce this beneficial effect, it is necessary that the author should choose some interesting and moving story, and then conduct it in a natural and probable manner. The end of tragedy is not like that of epic poetry, to elevate the imagination by the marvellous; but to affect the heart by a stricter imitation of the life and actions of men. This principle, duly regarded, excludes from tragedy all machinery, or fabulous intervention of the gods; and, therefore, the mixture of machinery with the tragic action, is a blemish in the ancient theatre. Hence some critics have required, that in order to produce and maintain the impression of probability upon which the success of tragedy depends, the subject should not be a pure fiction, but founded on real history, or known facts. This, however, seems to be an extreme; as a fictitious tale may affect the heart as much as a true history, provided that the events related be such as might easily have happened in the ordinary course of nature. Some of the most pathetic tragedies are altogether fictitious as to their subject; such as Voltaire's Zaire and Alzire, the Orphan, Douglas, the Fair Penitent, &c. For the regulation of the conduct of a tragedy, critics have established the famous rule of the three unities, to which we shall presently advert.

Tragedy, in its original, M. Hedin obseves, was only an hymn sung in honour of Bacchus by several persons, who, together, made a chorus of music with dances and instruments. A goat was the sacrifice offered to that god; and from ἄριας, a goat, and οὖν, a song, was formed the appellation tragedy.

As this was long, and might fatigue the singers, as well as tire the audience, they betought themselves to divide the singing of the chorus into several parts, and to have certain recitations in the intervals. Accordingly, Thespis (see his article) first introduced a person to speak upon the stage with this view. Phrynichus, the disciple of Thespis, selected that kind of verse which is most suitable to the drama; and introduced some other changes, but left tragedy in its infancy. He, it is said, introduced women's parts on the stage. 

Aeschylus, the father of tragedy, as he has been called, finding one person insufficient, introduced a second to entertain the audience more agreeably by a kind of dialogue; he also clothed his persons more decently, and first put them on the bulkin. For his other improvements in this species of drama, see his article ÆSCHYLUS.

The persons who made their recitations on the scene, were called αἰτῶν; so that tragedy at first was without many actors. And what they thus rehearsed, being things added to the singing of the chorus, of which they were not necessary part, were called ἐπιτόξευσ. 

Sophocles found that two persons were not enough for the variety of incidents; and accordingly he introduced a third; and here the Greeks seem to have stopped; at least, it is very rare that they introduce four speakers in the same scene.

The progress of the art under the culture of Æschylus, and his immediate successors, was extremely rapid. He had for contemporaries and competitors, Clerides, Pratinus, and Phrynichus already mentioned, whose glory he eclipsed; and Sophocles, who rivalled his own. Sophocles cenured in Æschylus three defects: the excessive elevation of his ideas, the gigantic style of his expressions, and the difficult conduct of his plots; and these faults he flattered himself for having avoided. By reducing heroism to its just standard, Sophocles lowered the style of tragedy, and banished those expressions which a wild imagination had dictated to Æschylus, and which diffused terror through the souls of his spectators. His style, like that of Homer, is full of strength, magnificence, sublimity, and mildness. Even in depicting the most violent passions, he happily fuits his style to the dignity of his personages. See the article SOPHOCLES.

Euripides, at an early age, emulated the fame of Sophocles, and aspired to the sovereignty of the stage. See the biographical article EURIPIDES.

Notwithstanding the prejudices and hatred of Aritophanes against Euripides, his decision in affigning the first place to Æschylus, the second to Sophocles, and the third to Euripides, was conformable to the opinion of the greater part of the Athenians. Æschylus, it is faid, painted men greater than they can be, Sophocles as they ought to be, and Euripides as they are. The two former had neglected passions and situations, which the latter thought capable of producing great effects. He sometimes represented princes inflamed with love, and refrining only adultery and crime; and sometimes kings debated by calamy to such poverty, as to be covered with rags, and solicit a wretched alms. These scenes, in which no resemblnce was discernible of the manner of Æschylus or Sophocles, at first disturbed the spectators. It was faid, that under no pretext ought the character and rank of the heroes of the stage to be so degraded; that it was highly reprehensible to portray with so much art images so shameful, and dangerous to supply vice with the authority of great examples. But at this time the Athenians in general were less offended at the attacks which the pieces of Euripides made on received ideas, than hurried away by the sentiments with which he had animated them; for this great poet, capable of managing at pleasure all the passions of the soul, is especially admirable when he paints the frays of love, or excites the emotions of pity; thus, surpassing himfelf, he sometimes attains the sublime, for which he seems not to have been intended by nature. While he was accused of enervating tragedy, he had proposed to render it the school of wisdom. Euripides, whose eloquence sometimes degenerated into a redundant profusition of words, and whose rhetorical phrases, learned digressions, and idle disputes reduced him much below Sophocles, who has said nothing which has not its utility, is nevertheless faid to have fixed the language of tragedy. He retained scarcely any expressions that are especially appropriated to poetry; but he so judiciously selected and employed those of ordinary language, that, under their happy combination, the feelings of the thought seemed to disapper, and the most common word to become ennobleed. Such was the magic of that enchanting style, which, preferring a just medium between fees and inflation, is almost always eloquent, clear, harmonious, flowing, and flexible, that it seems to adapt itself without effort to every feeling of the soul. Wliilst Sophocles admitted into his choruses the Phrygian
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Purposed harmony, the object of which was to moderate and temper the passions, and which was adopted to the worship of the gods; Europeans, favouing the innovations made by Thucydides in the ancient music, employed almost all the modes, and especially those, the sweetest and finest of which accorded with the genius of his poetry. Accordingly the audience were attracted to hear in the theatre entertainments, and sometimes division on a single syllable. Hence the author represented as a feeble art, with incapable of raising himself to the habitat of tragedy, had dispelled tragedy to the level of his own inferior abilities.

Europeans rarely succeeded in the enjoyment of his subjects; sometimes he offends against probability, sometimes the incidents are forced, and sometimes the action wastes away; almost always the complications and developments of his plots are not in some respect imperfect; and his characters have frequently only an indirect relation to the actions.

He invented the art of explaining his subjects in a prologue, or long prologue, almost entirely detached from the piece, in which usually one of the persons of the drama comes forward, and finally details all the events that forewent or related to the action, gives his own generation, or that of one of the principal characters, informs us of the occasion of his return, from whence he is a deity, or who has called him forth from the tomb, a mortal: and announces himself to the spectators by declaring his name.

It is hardly necessary in this connection to mention Derrylus the elder, king of Syracuse, who was adored in the composition of his tragedy by some men of genius, but was modeled to their admiration: for the victory he obtained in this species of literature. Aeschylus, Sophocles, and Euripides were, and ever will be, placed in the head of those who in ancient times rendered the stage illustrious. Nevertheless, though the number of pieces that performed in the theatrical compositions was very great, the best obtained the crown only thirteen times, the second but eighteen, and the last only five times; because the victory was decided by the multitude, which had powers which pattern in expression, and favourites whose interests are supported. It is remarkable, in how short a space of time tragedy grew up among the Greeks, from the modest beginning to the most perfect state. For Sophocles, the greatest and most correct of all the tragic poets, flourished only twenty-two years after Aeschylus, and was but little more than seventy years predecessor to Euripides. The obscure was the birth of the ancient tragedy, and the dramatic dialogue was superseded almost in a very few years. In proceeding to the chorus, the chorus, being the principal, became only the accessory in tragedy; all at last, in modern tragedy, it has disappeared altogether, which forms the chief distinction between the ancient and the modern stage.

Each tragedy required those actors for the three leading parts: and the same action sometimes performed both in tragedy and comedy; but persons very rarely excelled in both. Actors who had acquired great celebrity received considerable part; not less than a talent per annum in two days. The kind of verse generally employed in tragedy was the trochaic, a species of measure that frequently occurred in conversation. The actors had masks and symbols fixed to their several parts; and tragedy showed from its earliest invention employed the mask, which was completed under the hands of Aeschylus. In tragedy the number of the actors was frequently increased to four cubits (six English feet and nearly half an inch); which was effected by buffoons, that raised them four or five inches;
Unity of the action should not be confounded with the
simplicity of the plot. The plot is simple, when a small
number of incidents are introduced into it; but it may be
complex, in the language of critics, or include a considera-
able number of persons and events, and yet not be deficient
in unity, if all the incidents tend towards the principal
object of the play, and be properly connected with it.
Congreve's "Mourning Bride" is added as an instance
which stands in perfect opposition to the simplicity of the
ancient plots. The incidents succeed one another too rap-
idly, and the play is too full of cafes. Unity of action
must not only be regarded in the construction of the fable,
or plot, but it must also regulate the fcveral acts and scenes
into which the play is divided. The division of the play
into five acts is altogether arbitrary, and rests merely on
common practice, and the authority of Horace, De Art.
Poet. (See Acts, in Poetry.) The pauses between the
acts shou'd be duly adjusted; fo that there are correspond-
ating pauses in the action. The fifth act is the feat of the
Catastrophe; which fee. For the fcveral parts of tragedy,
see Act, Action, Character, Fable, Plot, Manners,
and Scene.

It has been a question much agitated among philo-
osophical critics, how it comes to pass that those emotions
of sorrow which tragedy exaites afford any gratification to
the mind? Sorrow, it is faid, is a painful fation: fcnes of
nilery exhibited in tragedies excite a degree of sympa-
thy and agitation that occasions anguish and diftrefs.
The fpeculators cannot fuppref their feelings; they are indicated
by their tears: and yet they applaud fuch exhibitions, and
recur to them with fatisfaction and pleaure. That fuch
exhibitions should draw fuch crowds of fpeculators, and that
they fhould be fo highly gratified by them, appears to be
fomewhat miffcrifious. The fect is acknowledged, and many
hypothefes have been propofed for the fatisfactory expi-
cation of it. In order to account for it, we can by no
means recur to an innate principle of malice, which prompts
us to extract delight from the fufferings of others, and as
it were to enjoy their calamities. Dr. Campbell, in his
"Philofophy of Rhetoric," (vol. i. chap. 11.) has detailed
and examined the various hypothefes that have been devisd
by ingenious men for the solutlon of this difficulty. The
theory of the abbe du Bos, in his "Reflections on Poetry
and Painting," is as follows. Few things, according to him,
are more difagreeable to the mind, than that littlefaccs into
which it falls, when it has nothing to occupy it, or
to awake the passions. In order to get rid of this most painful
situation, it feeks with avidity every amufement and
pufh: buffeins, gaming, news, showes, public executions,
romances; in fhort, whatever will rufe the passions, and take
off the mind's attention from itfelf. It matters not what
the emotion be, only the stronger it is, fo much the better.
And for this reafon, fuch passions, which, confidered in
themselves, are the moft afflicting and difagreeable, are pref-
erable to the pleafant, in a manner as they most effectually
relieve the foul from that oppressive languor which preys
upon it in a flate of inactivity. They afford it ample occu-
pation, and by giving play to its latent movements and fprings
of action, convey a pleaure which more than counter-
balances the pain.

Mr. Hume, in reference to this theory, obferves, that
the fame object of disaftris which pleafes in a tragedy, were
it really fet before us, would, without doubt, give the moft
unfeigned uneafiness, though it fhould be the moft effectual
cause of languor and indolence; and Dr. Campbell fays,
that the moft which can be concluded from the abbe's pre-
mife is, the utility of exciting passion of fome kind or other,
what moves them, and their experiences to be convinced that
it is a fiction. This can result only from the consciousness
that, in ordinary cases, disbelief, by weakening their pity,
would diminish, instead of increasing, their pleasure. They
must be very far then from entertaining Fontenelle's notion,
that it is necessary to the production of that pleasure; for
we cannot well suspect them of a plot against their own
enjoyment: thirdly, and lastly, from the delight which we
take in reading or hearing the most tragic narratives of
orators and historians, of the reality of which we entertain
no doubt; I might add, in revolting in our own minds,
and in relating to others, frightful incidents, which have
fallen within the compass of our own knowledge, and as
to which, consequently, we have an absolute assurance of the
fact."

The third hypothesis produced and examined by Dr.
Campbell is Mr. Hume's, which he proposes as a supple-
ment to the former two, in the doctrine of both which he,
in a great measure, acquiesces. "What is it then," says
Mr. Hume, "which in this case (that is, when the sorrow
is not softened by fiction) raises a pleasure from the bofon
of uneasiness, so to speak; and a pleasure, which still re-
tains all the features and outward symptoms of distress and
sorrow? I answer: This extraordinary effect proceeds
from that very eloquence, with which the melancholy scene
is represented. The genius required to paint objects in a
lively manner, the art employed in collecting all the pathetic
circumstances, the judgment displayed in disposing them:
the exercise, I say, of these noble talents, together with
the force of expression, and beauty of oratorical numbers, diffuse
the highest satisfaction on the audience, and excite the most
delightful movements. By this means, the uneasiness of
the melancholy passions is not only overpowered and effaced
by something stronger of an opposite kind, but the whole
movement of those passions is converted into pleasure, and
swells the delight which the eloquence raises in us. The
fame force of oratory employed on an uninteresting subject,
would not please half so much, or rather would appear
altogether ridiculous; and the mind, being left in absolute
calmness and indifference, would relish none of those beauties
of imagination or expression, which, if joined to
pain, give it such exquisite entertainment. The impulse
or vehemence arising from sorrow, compassion, indignation,
receives a new direction from the sentiments of beauty.
The latter being the predominant emotion, seizes the whole
mind, and converts the former into themselves, or at least
triumphs them so strongly, as totally to alter their nature;
and the soul, being at the same time roused by passion,
and charmed by eloquence, feels on the whole a strong
movement, which is altogether delightful."

The insufficiency of this hypothesis is very satisfactorily
evaded by Dr. Campbell; and he has shown, that instead
of being supplementary to M. Fontenelle's, as he intended it
to be, it is subversive of the principles on which the French
critic's theory is founded. The effect, according to the
latter, results from moderating, weakening, softening, and
diminishing the passion; according to the former, it results
from what is directly opposite, from the arts employed by
the orator for the purpose of exaggerating, strengthening,
heightening, and inflaming the passion. Indeed, neither of
these writers seems to have attended sufficiently to one par-
cular, which of itself might have shown the insufficiency
of their systems. The particular alluded to is, that pity, if
it exceed not a certain degree, gives pleasure to the mind,
when excited by the original objects in distress, as well as
by the representations made by poets, painters, and orators:
and, on the contrary, if it exceed a certain degree, it is on the
whole painful, whether awakened by the real objects of pity,
or roused by the exhibitions of the historian or of the poet.
Indeed, as fierce operates much more strongly on the mind
than imagination does, the excess is much more frequent in
the former case than in the latter. But our limits will not
allow our enlarging.

A fourth hypothesis is that of those who maintain that
compasion is "an example of unmixed selfishness and ma-
lignity," and may be "resolved into that power of ima-
gination, by which we apply the misfortunes of others to
ourselves," that we are said "to pity no longer than we
fancy ourselves to suffer, and to be pleased only by re-
lecting that our sufferings are not real; this indulging
a dream of distress, from which we can awake whenever we
please, to exult in our security, and enjoy the comparison
of the fiction with truth."

This is no other, as Dr. Campbell observes, than the
antiquated doctrine of the philosopher of Malmesbury
refused from oblivion, to which it had been fast declining,
and republished with improvements. Hobbes, indeed,
thought it a sufficient stretch, in order to render the sym-
pathetic sorrow purely selfish, to define it "imagina tion or
fiction of future calamity to ourselves, proceeding from
the same of another man's calamity." This paradoxical con-
ext, as our author has denominated it, has been adopted by
Hawkesworth in the "Adventurer." In the selfish system
it appears to be a great objection, that in pity we are
affected with a real sorrow for the sufferings of others, or
at least that men have universally understood this to be the
case, as appears from the very words and phrases expressive
of this emotion to be found in all known languages. But
to one who has thoroughly imbibed the principles and
spirit of a philosophic nature, who hath commonly as violent
an appetite for mystery (though under a different name, for
with the philosopher it is paradox) as any religious sect
however, women must an objection appear, which
hath nothing to support it but the conviction of all mankind,
those only excepted whose minds have been perverted by
scholastic sophistry?

It is remarkable, that though it has been contended by a
number of persons, that some fiction of the imagination
is absolutely necessary to the production of pity, and
though the examples of this emotion are so frequent, as to
give ample scope for examination, they disagree with re-
gard to their fiction. Some contend only, that in witt-
ening tragedy, one is under a sort of momentary deception,
which a very little reflection can correct, and imagines that
he is actually witnessing those distresses and miseries which
are only represented in borrowed characters, and that the
actors are the very persons whom they exhibit.

Others, who refer every thing to self-maintenance, that by
a fiction of the mind, we instantly conceive some future and
similar calamity as coming upon ourselves; and that it is
fondly this conception, and this dread, which call forth all
our sorrow and our tears. Others, not satisfied with this,
maintain boldly, that we conceive ourselves to be the
persons suffering the miseries related or represented, at the very
instant that our pity is raised. When nature is deferred by
us, it is no wonder that we should lose our way in the
devious tracks of imagination, and not know where to
foster.

Dr. Campbell's hypothesis is illustrated by the following
general observations, of which the following detail is an
abstract. He observes, it, that almost all the simple
passions, of which the mind is susceptible, may be divided into
two classes, viz. the pleasant and the painful, differing
considerably both in kind and degree: 2dly. Among the
passions,
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passions, as well as among the ideas of the mind, there is an attraction or affection. 3dly. Pain of every kind generally makes a stronger impression on the imagination than pleasure does, and is longer retained by the memory. 4thly. From a group of passions associated together, and having the same object, some of them pleasurable, and others painful; if the pleasurable predominate, there arises often a greater and a more durable pleasure to the mind, than would result from these, if alone and unmixed. 5thly. Under the name pity may be included all the emotions excited by tragedy. It has been usual, however, to comprehend pity and terror under the class of passions that are moved by tragedy; but our author observes, that this enumeration is more popular than philosophical, though adopted by the Stagyrite himself. For what is pity but a participation by sympathy in the woes of others, and the feelings naturally consequent upon them, of whatever kind they be, their fears as well as forrovs: whereas, this way of contradicting nothing from pity, would make one, who knew nothing of tragedy but from the definition, imagine, that it was intended to make us compassionate others in trouble, and dread mischief to ourselves. If this were really the case, Dr. Campbell thinks there are few or none who would find any pleasure in this species of entertainment. If all the sympathetic affections excited by theatrical representations were enumerated, our author cannot see why hope, indignation, love and hatred, gratitude and resentment, should not be included as well as fear. 6thly. Pity is not a single passion, but a group of passions distinctly united by affection, and as it were blended, by centering in the same object. Of these, some are pleasurable, some painful, but commonly the pleasurable preponderate.

In pity there are three different emotions: firstly, commiseration, purely painful; secondly, benevolence, or a desire of the relief and happiness of the object pitied, a passion, as was already observed, of the intermediate kind; thirdly, love, in which is always implied one of the noblest and most exquisitely pleasures whereas the soul is susceptible, and which is itself, in most cases, sufficient to give a counterpoise of pleasure to the whole.

The principal pleasure in pity arises from its own nature, or from the nature of those passions of which it is compounded, and not from any thing extrinsic or adventitious. Nevertheless, certain adventitious circumstances may contribute to heighten the effect; but they cannot be regarded as essential to the passion. Of this fort is the satisfaction which ariseth from a sense of our own ease and security, compared with the calamity and the danger of another.

"Tis pleant, safely to behold from shore
The rolling ship, and hear the tempest roar:
Not that another's pain is our delight;
But pangs unfelt produce the pleasing light.
"Tis pleant also to behold from far
The moving legions mingled in the war."

Another adventitious source of pleasure is, the satisfaction that results from the concious exercise of the humane affections, which it is our duty to cherish and improve. Sensc, as we have frequent occasion to observe, invariably makes a stronger impression than memory, and memory a stronger than imagination; yet there are particular circumstances which appear to form an exception, and to give an efficacy to the ideas of imagination, beyond what either memory or sense can boast. So great is the anomaly which sometimes displays itself in human characters, that it is not impossible to find persons who are quickly made to cry at seeing a tragedy, or reading a romance, which they know to be fictitious, and yet are both inattentive and unfeeling in respect of the actual objects of compassion who live in their neighbourhood, and are daily under their eye.

Men, says our author, may be of a selfish, contracted, and even avaricious disposition, who are not what we should denominate hard-hearted, or inflexible of sympathetic feeling. Such will gladly enjoy the luxury of pity, (as Hawkeford terms it,) when it nowise interferes with their more powerful passions; that is, when it comes unaccompanied with a demand upon their pockets. With the tragic or the romantic hero or heroine they most cordially sympathize, because the only tribute which wretches of their dignity exact from them is sighs and tears. And of these their confidences inform them, to their inexplicable consolation, that they are no niggards. But the cafe is totally different with living objects. Barren tears and sighs will not satisfy theie. Hence it is that people's avarice, a most formidable adversary to the unhappy, is interested to prevent their being moved by such, and to make them avoid, as much as possible, every opportunity of knowing or seeing them. See this observation admirably exemplified in the parable of the compassionate Samaritan, Luke, x. 30. Our author concludes with observing, that compassion alone, especially that displayed on occasion of witnessing public spectacles, is at best but a very weak evidence of philanthropy.

Dr. Blair, agreeing in the main with the hypothesis of Dr. Campbell, introduces the following observations on this subject, which we cannot forbear transcribing. "By the wife and gracious constitution of our nature, the exercise of all the social passions is attended with pleasure. Nothing is more pleasing and gratifying than love and friendship. Wherever man takes a strong interest in the concerns of his fellow-creatures, an internal satisfaction is made to accompany the feeling. Pity, or compassion, in particular, is, for wife ends, appointed to be one of the strongest instincts of our frame, and is attended with a peculiar attractive power. It is an affection which cannot but be productive of some distresses, on account of the sympathy with the sufferers, which it necessarily involves. But, as it includes benevolence and friendship, it partakes, at the same time, of the agreeable and pleasing nature of those affections. The heart is warmed by kindreds and humanity, at the same moment at which it is afflicted by the disaffections of those with whom it sympathizes: and the pleasure arising from those kind emotions prevails so much in the mixture, and so far counterbalances the pain, as to render the state of the mind, upon the whole, agreeable. At the same time, the immediate pleasure, which always goes along with the operation of the benevolent and sympathetic affections, derives an addition from the approbation of our own minds. We are pleased with ourselves for feeling as we ought, and for entering, with proper sorrow, into the concerns of the afflicted. In tragedy, besides, other adventitious circumstances concur to diminish the painful part of sympathy, and to increase the satisfaction attending it. We are, in some measure, relieved, by thinking that the cause of our distress is feigned, not real; and we are also gratified by the charms of poetry, the propriety of sentiment and language, and the beauty of action. From the concurrence of these causes, the pleasure which we receive from tragedy, notwithstanding the distress it occasion, seems to me to be accounted for in a satisfactory manner. At the same time, it is to be observed, that, as there is always a mixture of pain in the pleasure, that pain is capable of being so much heightened, by the representation of incidents extremely direful, as to shackle our feelings, and to render us averse, either to the reading of such tragedies, or to the beholding of them upon the stage."

Under the general head of the unity of action, to which
after a long digression we now return, it may not be improper to make a few remarks on the conduct of the several scenes which make up the acts of a play. See Scene.

The contrast of a new passage with the stage form, what is called, a new scene. These forms, or successive conversations, should be closely linked and connected with each other. For this purpose, two rules should be observed. The first, that, during the course of one act, the stage should never be left vacant; for whenever the stage is vacated, the act is closed. This rule is generally observed by the French dramatists; but the English writers, both of comedy and tragedy, seldom pay any regard to it. The second rule, better observed by English writers than the former, is, that no person should come upon the stage or leave it, without a reason appearing to us, both for the one and the other.

In order to render the unity of action more complete, critics have added the other two articles of time and place. The unity of place requires, that the scene should never be changed, but that the action of the play should be continued in the same scene, in the same place, as it is supposed to begin. The unity of time, hardly taken, requires, that the time of the action be no longer than the time that is allowed for the representation of the play; though Aristophanes seems to have given the poet a little more liberty, and permitted the action to comprehend the whole time of one day. During the course of each act, the states of time and place ought to be distinctly observed, that is, during each act the scene should continue the same, and no more time should be supposed to pass than is employed in the representation of that act. This is a rule which the French dramatists regularly observe. To violate this rule, is to too often allow the English to change the place, and shift the scenes in the midst of one act, these great contradictions, and destroy the whole intention of the division of a play into acts. Mr. Addison's "Cato" is remarkable beyond most English tragedies for the regularity of conduct. The author has limited himself in time, to a single day; and in place, has maintained a most rigorous unity. The scene is never changed; and the whole action takes place in the hall of Cato's house, in Utica.

The characters must appear to be exhibited in tragedy as have been usually considered by writers on this subject. (See Character.) Several critics require that the principal persons should be of high or princely rank, because their qualifications and actions interest in the imagination, and impress the heart more forcibly than those of persons in humbler condition or more private life. But this observation is more specious than sound, and is refuted by facts. The histories of Dido, Constance, and Belvedere, all as much as if they had been princes or princes. The moral characters of the persons represented are much more important than the external circumstances in which they are exhibited. The passions presented to view, and the incidents relating to them, should be so described, as to leave upon the spectator impressions favourable to virtue, and to the administration of Providence. Mix of characters, such as occur in the world, afford the most proper field for displaying, without any bad effect, on morals, the weaknesses of life; and they interest us the more deeply, as they display emotions and passions, of which we have all been conscious. The subjects of the ancient Greek tragedies were too often founded on more daring, and incredible misfortunes; and though the court of the drama, many moral sentiments occurred, the instruction conveyed by the fable of the play was seldom any more than that revenge was owing to the gods, and submission to the decrees of destiny. Besides, their tales about fables, and the vengeance of the gods, led to many incidents more melodiously and tragically than moral and useful. Modern tragedy has aimed at a higher object. An Othello, hurried by jealousy to murder his innocent wife: a Jaffar, embarrassed by repentance and want to engage in a conspiracy, and then flight with remorse, and involved in ruin: a Siiffred, through the deceit which he employs for public purposes, with bribery, distortion on whom he loved: a Caius, induced into a criminal intrigue, which overthrows his wife, his father, and all his friends in misery: these, and such as these, are the examples which tragedy now displays to public view: and by means of which, it incites or men the proper government of their passions.

The events of a tragedy should be suited to the characters of the persons to whom they are attributed, and to the situations in which they are placed. Moral sentiments and reflections would not occur too often, because they would thus lose their effect, and they would render the play ponderous and declamatory. This is the character, in a great degree, of Seneca's tragedies. Nevertheless, moral reflections, properly introduced, give dignity to a composition, and on many occasions, are extremely natural. Much of the merit of Addison's Cato depends upon that moral turn of thoughts which distinguishes it. The style and composition of tragedy should be free, easy, and varied. Our blank verse is happily suited to this purpose. The style of tragedy ought always to possess force and dignity, but at the same time that ease and brilliancy, which are adapted to the freedom of dialogue, and the expressions of passion.

Of the Greek tragedy and tragedies we have already given some account, in the composition of some of the French dramatic writers, particularly Corneille, Racine, and Voltaire, tragedy has appeared with much latitude and dignity. But though they have improved upon the ancients, though they are attentive to all the units, and to all the decorums of sentiment and morality; and though their style is generally very poetical and elegant: yet they want fervour, strength, and the natural language of passion too declamatory, when they should be passionate; and too refined, when they should be simple. These defects of the French theatre are freely acknowledged by Voltaire. See their respective biographical articles. The general characteristics of tragedy in Great Britain, is, that it is more sublime and passionate than French tragedy, but more irregular and incorrect, and less attentive to decorum and to elegance. See the biographical articles of Shakespear, Dryden, Otway, Rowe, Young, Congreve, Thomson.

We shall close this account of tragic compositions with the following extract from Dr. Blair's Lectures, vol. i.

"A Greek tragedy is the relation of any disastrous or melancholy incident: sometimes the effect of passion or crime; sometimes of the decree of the gods, simply expected: without much variety of parts or events, but naturally and beautifully set before us, heightened by the poetry of the chorus. A French tragedy is a variety of artless and refined conversations, founded upon a variety of tragic and interesting situations: carried on with little action and vagueness; but with much poetical beauty, and high propriety and decorum. An English tragedy is the counterfeit of solemn pageantry; it begins in us all their violence; producing deep emotions; often irregularly constructed;1 involving no action; and filling the spectator with grief. The ancient tragedies were more natural and simple: the modern are more artificial and complex. Among the French, there is more correctness; among the English, more fire. Andromaque and Zare, written by Othello and Venier Preserved, round the heart. It deserves remark, that three of the greatest masterpieces of the French tragic stage, are wholly upon religious subjects: the Atheist of Racine, the Polyburnes of Corneille, and the Zare of Voltaire. The first is founded upon an
ADANON always called him Le Bouc, as if we were to say in English Mr. He-goat; and would not retain the Linnean name of the present genus, preferring that used in the Hortus Malabaricus, Schorgeram, etc., by a fatality incident in orthography to many of his countrymen, Schorgeram, which blunder he seems to have copied from Linneas. Nobody has attended to this erudite alteration.


Gen. Ch. Male, Cal. Perianth in three deep, ovate, acute, flat, spreading segments. Cor. none. Stamen three, the length of the calyx; anthers roundish.

Obf. Linneas remarks, that Plumer took this calyx for a funnel-shaped monopetalous corolla.

Female, on the same plant, Cal. Perianth inferior, in five, sometimes six, deep, ovate, concave, acute, permanent segments. Cor. none. Pest. German superior, roundish, with three furrows; style one, erect, longer than the calyx; stigma in three spreading segments. Peric. Capsule of three globular lobes and three cells, bristly, each cell marked at the base externally with a pair of dots. Seeds solitary, globose.


Obf. Some species have the style more or less deeply split into three parts.

TRAGIA is an unfigurative genus, with the aspect of a nettle, or a Croton. The flowers are green and inconspicuous; the herbage moliy lapidary or hairy; the stem either twining, often shurby and perennial; or erect, herbaceous, with an annual root.

Sect. 1. Stem climbing.
Lamark f. 1. (T. ala scandens, urtica folio; Plun. Lc. 251. t. 252. f. 2.)—Leaves ovate, somewhat heart-shaped, pointed, strongly serrated, rather hairy. Foot-flaks bristly above. Segments of the female calyx undivided. Stem twining.—Native of dry, calcareous situations in the West Indies, blooming in our stove in June and July, provided it be admitted there. The stem is round, hairy, leafy, branched, twining from well to call. Leaves alternate, about two inches long; paler beneath. Flowers axillary; the males in long bracteated clusters; the females solitary, on a long flalk at the base of each cluster. Capsule the size of a large pea. Browne's specimen has the leaves more soft and downy beneath than in the original one from the Upal garden. Whether the S of Linneas, Plun. Lc. t. 252. f. 1, be a variety, or a distinct species, we have no means of determining.

2. T. cordata. Heart-leaved Tragia. Vahl Symb. v. 1. 76. Illusr. n. 2. (Jatropha pungens; Forsk. Ægypt.-Arab. 163.) — "Leaves heart-shaped, pointed, serrated; bristly beneath. Segments of the female calyx pinnatifid, hairy. Stem twinning."—Gathered by Forskall near Yemen, in Arabia Felix, where it is called Hörnek, Meherkaka, or Humija. Vahl says the stem is shrubby, twining, and, like the whole plant, bristly. Leaves paler beneath. Spikes terminal.

3. T. biflora. Brittle Tragia. Plun. illusr. n. 3. "Leaves lanceolate,
TRAGIA.

laccolate, pointed, bifid, nearly entire; heart-shaped at the base. Segments of the female calyx pinnatisected, rough with bristles. Stem climbing. - Native of the East Indies. Leaves on very short, very hirsute stalks, more or less branched, two inches long, occasionally furnished with an oblong tooth at the base, or near the point. Spike axillary, filiform. Calyx densely covered with white bristles.

2. T. macrorhiza. Large-stemmed Tragia. Willd. n. 2. Parch n. 3. (T. exorticata ; Michaux Borel.- Amer. v. 2. 1815.) — Leaves obovate, sharply toothed, hispid; deeply heart-shaped at the base. Stem twining. - Found by Michaux in Kentucky. Annual, flowering in July. Parch. Each lobe of the capsule is said to be the size of a large pea.

3. T. colletia. Shaggy Tragia. Thumb. Prodr. 12. Willd. n. 3. - "Leaves heart-shaped, entire; hairy beneath. Stem climbing." - Gathered at the Cape of Good Hope by Thouburn, who alone appears to have seen this or the next species.


From the same country.


Clasper; lateral, afiliform, short and simple, each of several very small green male flowers, with a solitary female one at the base. Capsule woody, hairy, enveloped in the large, very bristly, strongly pinnatifid, or pinnate, permanent calyx.


22. T. sphaerocarpa. Horned Tragia. Linne. Sp. Pl. 1821. Willd. n. 12. Art. n. 3. Parch n. 1. Lamark n. 12. (Ricinocarpus pumus, folius esculentus, virginianus; Plunk. Phyt. t. 107. f. 5.) - Leaves oblong-laccolate, obtuse, edentate, more or less toothed towards the extremity, downy, as well as the upright; branched stem. - In cultivated and waste ground, and by road-sides, from Virginia to Carolina; annual, flowering from June to August. Parch.

The name of these seems to have remained with this species on the authority of Plukkenet. Its pubescence appears to be of a very fine kind; nor has any recent botanist attributed to it any fuming property. The habit of the herb is like a Mercurialis. The leaves are from one to two inches long, very variable in breadth; usually deeply toothed, or almost fringed; rarely linear and entire. Clasper axillary, longer than the leaves. Capsule: slightly hairy.


14. T. cernua. Lance-leaved Tragia. Linne. Suppl. 1845. Willd. n. 14. Art. n. 2. Lamark n. 12. (Croton hystosterus; Linne. Sp. Pl. 1821. Bemm. Ind. 1825. t. 63. f. 1. Ricinus laevius, alceae venus folium hystesterum acceperat; Plunk. Phyt. t. 202. f. 2.) - Croton urceae; Linne. Sp. Pl. 1821. (Ricinus urceae, canthus folium triphylloides; Plunk. Phyt. t. 202. f. 2.) - Leaves deeply three-toothed, or serrate, toothed; the middle lobe longest; ribs more bristly beneath. Stem erect. - Native of the coast of Mahobah, in gravelly places. A perennial herb, whose foliage bears a considerable resemblance to the Venetian Mallow, Hibiscus Tenstrum. The lobes of the leaves are obtuse, jagged and toothed, bristly on both sides, but particularly along the ribs and veins beneath. The leaflets and tendrils are also bristly. Clasper: on long, lamina, very bristly, thick. Calyx of the fruit pinnatifid, thickly covered, as well as the capsule, with pale yellow bristles. When the lobes of the leaves are quite separate to the very base, the plant becomes Croton urceae of Linne; but this affects no permanent specific distinction. Plukkenet's figures of both varieties are ineffectively preferable to Bremsius's plate.

TRAGI-COMEDY. See Emmelia.

TRAGI-COMEDY, a kind of dramatic piece, repre-}

senting fome action paffed among eminent persons, the

event of which is not unhappy or bloody, and in which is

sometimes admitted a mixture of fels serious characters.

The ancients, M. Dacier observes, knew nothing of fuch

compositions, in which the serious and comic are blended;

nor does the epithet M. Cornelle gives them, of heroic

comedies, excuse their irregularity.

Their foundation is certainly bad; for, endeavou ring

both to make us laugh and cry in their turns, they endea-

vour at contrary emotions, which the heart can never

undergo; every thing that disposes for the one, indispofing

for the other.

The tragi-comedy was formerly very common on the

Englifh stage; there was fearcely fuch a thing in the seven-

tenfenth century as a pure tragedy, without a fpic of comedy

or farce to make the people laugh. Now that the stage

and our tafe are brought nearer to the model of nature and

the ancients, the tragi-comedy is difflufed.

Tragi-comedy is the only cafe wherein comedy is allowed
to introduce kings and heroes. 

See EAR.

TRAGILUS, in Ancient Geography, a town of Thrace,
between the Cheronica and Macedon. Steph. Byz.

TRAGIUM, in Botany, a new umbelliferous genus of

Sprengel's, feparated by him from Pimpinella; fee that

article. The name is borrowed from Dioscorides, whose

appears to belong to our Pimpinella, and to have been

denominated from spina, a goat; because when the wild

goats fed upon it, the arrows with which they were

wounded would drop ou t; as Aelian relates of the Cretan

Dittany.—Sprengel Prodrt. Umbellif. 26—Clafs and order,


fruits armata, Sprengel.

The learned author whom we have juft quoted, in his new

mode of arranging the Umbellifera, of which, as well as

of other attempts of the fame kind, we propofe to treat here-

after in its proper place, lays confiderable frefs on the hairy

or briskly clothing of the feeds in fome fpecies. Such are

all feparated by him from thole with smooth feeds, and dif-

eposed in different genera, compofing by themfelves a par-

ricular fection characterized "fruits armatis." Among them is

Tragium, diftinguifhed from Pimpinella chiefly by the

furnucjhad juft mentioned, and the almost total ab-

de of ribs to the feeds.

Ef. Ch. Fruit ovate-oblong, downy, with scarcely any

ribs. Scan flatifis. Skin rather hoole. No general or

partial infolurcnce.

Obf The feam, commiffura, is the line by which the two

feeds touch each other.

The fpecies enumerated by professor Sprengel are

1. T. Columna. (Pimpinella Tragium of Villars. See

our Pimpinella, fp. 4, where notice is taken of the

importance of the downiefs of the feeds, as a fpecific diffic-

tion; and where for Columbia read Columna.)


Marich. a Bieberit. Taur.-Caucal. V. 1. 241; fee fp. 7.)

3. T. aromaticum. (P. aromatica; Marich. a Bieberit.

Taur.-Caucal. V. 1. 241.)—"Hoary with down. Leaves

pinate; leaflets all wedge-shaped, lined; with deep fer-

creations at the extremity."—Native of the borders of woods,

and banks of torrents, on the eaf side of mount Caucaus,

flowering in July. Root biennial. Akin to Pimpinella

Anisafum, with which it exactly agrees in the tafe and infell

of its feeds. But the preffent plant has all the leaves pinate

and glaucous, more flightly flirated, or ribbed, and the

feeds are downy.

4. T. villosum. (Pimpinella villosa of Schoubee; un-

known to us.)

5. T.
5. T. Broteri. (P. bubonoides; n. 5.)

The fruit of this last is much more hairy than that of the first species. On a review of the whole genus of Pimpinella, there appears to us not the slightest difference in the form of the seeds, nor in the thickness of the ribs in the several species, except that the latter are concealed by the hairs in P. bubonoides, though this is by no means the case in P. Tragium, whose ribs are more prominent than in any other under our inspection. There seems to be no reason for changing the specific name bubonoides; which is singularly expressive of the habit of the plant.

TRAGONISI, or DRAGONISI, in Geography, an island in the Greek Archipelago, so called from the number of goats, which are almost its only inhabitants; 2 miles W. of Myconos. N. lat. 38° 27'. E. long. 25° 30'.

TRAGOPON, in Botany, Goat's-beard, from 2ae2ae, a goat, and a beard; a name adopted from Dioscorides, whose authority may well belong to the genus which now bears it. His description answers in every particular to our T. perfoliatus, except the shortness of the stem. He says it is "an erect herb, with leaves like Garlic or Saffron, a short stem, a long sweet root, with a large flower-cup on the top of the stalk, and a black, or dark, seed," according to some readings, "from whence, its name is derived." But Sibthorp, the best commentator on this ancient author, instead of 2ae2ae myconos, and 2ae2ae monos, would read 2ae2ae myconos, and 2ae2ae monos; for he justly remarks, that a black seal could never have given rise to the name of Goats-beard. With this explanation, the dark calyx, and the large papita, or seed-head, are intelligible enough, as describing the deep purple florets lining the calyx, and the feathery seed-head, of T. perfoliatus. So Matthiolus likewise understands the matter.

Dr. Sibthorp indeed did not meet with this plant in Greece, and it is found a place in his Prod. F. Grec. merely as having been observed by the abbe Sessini, near Constantiopolis; but it might have been cultivated in Greece, as well as elsewhere.


Obs. Vaillant distinguished his Tragopogon by having straight seeds, and a calyx longer than the corolla; while his Tragopogonidz. has incurved seeds, and a calyx shorter than the corolla. Linnaeus makes no such distinction. Jussieu, and after him Willdenow, have adopted the latter genus of Vaillant, though by a different character and name, referring thereto such species as have a turbinate simple-leaved calyx, in eight segments only, not eight leaves. Of this we shall treat at the end of the present article, describing first the genuine species of Tragopogon, all首席, from which are to be removed what constitute the Tragopogon of Gartnert, to be described in its proper place.

Ed. Ch. Receptacle naked. Calyx of several leaves in a simple series. Seed-down stalked, feathery.


2. T. pratensis. Changeable Goat's-beard. Jacq. Mus. v. 2. 315. L. Rar. t. 357. Willd. n. 2. - Calyx as long as the corolla. Leaves lanceolate, rough-edged; recurved at the point; somewhat ovate at the base. - Supposed to be a native of Siberia, the seeds having been sent to Jacqueline by Pallas. We have seen no specimen. The leaves appear to be broader at the base, and less sheathing, than in the foregoing, and their points rather revolute than flat. The flowers, which open at sun-rise, and close about on the Island in the morning, for three successive days, are usually white in some individuals roseline, and red in others, having the edge much waved, revolute at the point. - Found in the lowlands of Austria, along with T. pratensis, of which some think it a variety; but the flowers are much smaller and paler, and the undulated leaves are remarkable. 

2. T. pratensis. Oriental Goat's-beard. Linn. Sp. Pl. 1129. Willd. n. 4. Alt. n. 3. (Bakhtiar hirti; Camer. Epit. 212.) - Calyx shorter than the corolla. Leaves tapering, somewhat wavy, with spired points. - Found by Tournefort in the Levant, and by Cameron, as it seems, in Germany. M. Thouain sends seeds to Kew garden in 1787. It is a hardy biennial, flowering, like all the foregoing, in June and July, and not the plant seem to differ much from the first, or most common kind, except in the greater size of its golden flowers, whose marginal florets extend far beyond the calyx.


6. T. major. Great Goat's-beard. Jacq. Autr. v. 19. t. 29. Willd. n. 6. Ait. n. 4. Marsh. von Bieberlit. Taur.-Caucuf. v. 2. 233. — Calyx longer than the corolla. Leaves tapering, straight. Flower-flats swelling upward. Flores rounded at the tip. — Native of meadows, vineyards, &c. in Germany and Austria, as well as near Branfon, in Switzerland, where it was found flowering in Auguft, by the late Mr. Davall, who fed its seeds to Kew in 1788, and whose own specimen is now before us. The gradual dilatation of the flower-flats upward, the great size of the flowers, at leaf of their calyx, which extends much beyond the corolla, and confails of a greater number of leaves than the generic character requires, even as many as twelve or thirteen; these circumstances led Jacquin to consider the present plant as a diftinct species from T. pratensis, or at leaft as a remarkable variety. We believe it remains conffant from seed. Some of the preceding are but too nearly akin, this to oad next to the pratensis.

7. T. porrifolius. Purple Goat's-beard, or Saffafle. Linn. Sp. Pl. 1110. Willd. n. 7. Fl. Brit. n. 2. Engl. Bot. t. 58. Jacq. Ic. Rur. t. 159. Fl. Dan. t. 707. (T. purpureum; Ger. Em. 735. T. alterum; Matth. Valgr. t. 491.) — Calyx almpt twice as long as the corolla. Flores tapering, abrupt. Leaves ftraight. Flower-flats swelling upwards. — Native of meadows in Switzerland, Germany, England, and about Constantinople, flowering in May and June. Cultivated in the kitchen gardens of the more opulent, the roots being esteemed a delicacy, and known by the name of Saffafle. They refeemble Scorasera bifanica, and have a feewett delicately flavoured, when defreen with cream, but are esteemed chiefly for the fake of variety. This plant having been perhaps more cultivated when efulent vegetables were fewer in England, has become naturalized in various situations, chiefly of a low and moist defcription. We have alluded to it above as the true πραγμήνη of the Greeks. The herb is biennial, erect, glaouos, smooth, four or five feet high. Leaves feightly, or not all, wavy. Flowers of a violet-purple, with black anthers; they close before noon. Linnaeus, in his Difler-ufion on the Sexes of Plants, Englih ed. 54, relates that he obtained a mule plant, by fprinking the fligma of T. pratensis with the pollen of the present species. The progeny of the feds had purple flowers, yellow at the bafe, evidently of an intermediate nature between the two parents; nor can any thing, as Linnaeus observes, more decidedly evince the generation of plants.

8. T. anguifolius. Narrow-leaved Goat's-beard. "Beldari MSS." Willd. n. 8. — "Calyx of eight leaves, longer than the corolla. Leaves ftraight, smooth." — Found near Niece. Biennial. Like T. crolfolius, but the calyx consists of eight leaves, and the foliage is entirely smooth at the bafe. The stem is but four inches high. Wildenow. We are not fure whether one of our fpecimens from Dauphiny be referrible to this species. It is hardly three inches high; the foliage quite smooth and naked throughout; but the calyx has only five fexes. Another from the fame country fseems intermediate between it and crolfolius. The fpecies of few genera are lefs fatisfactorily defined than thofe of Tragopogon.

9. T. crolfolius. Crocus-leaved Goat's-beard. Linn. Sp. Pl. 1110. Willd. n. 9. Ait. n. 6. Sm. Fl. Grec. Sibth. t. 779. unpublished. (T. crocololium montanum, flore negro-purpureo; Column. Ecpr. v. 1. t. 320.) — Calyx longer than the corolla. Leaves tapering; loofely woolly at the bafe on the upper fide. — Native of Italy, the fouth of France, and the ifle of Cyprus. Miller is faid to have cultivated this fpecies, but we do not remember to have met with it in gardens. The root is tapering and biennial, like all the reft of this fection. The flena is fearely above a foot high, branched, nearly or quite fmoother, clothed with numerous, narrow, spreading, drooping, white-ribbed leaves, very remarkable for a quanity of loft, flagggy, cottony wool, about their bafe on the upper fide, which is fometimes found also on the branches and flower-flats. Flowers of a violet-purple, with yellow fligma and blackifh anthers; their florets more spreading than in T. porrifolius, and their calyx greatly deflexed, twice as long as the corolla, conflufing of from five to eight acute leaves. Columna reprefents five broad ones only; Dr. Sibthorp found eight, which are narrower. The humble fature of the plant, and its woolly leaves, afford its moft striking diftinctions. The feds are beautifully adorned with advancing fcales, which prevent their efcaping, when once lodged in the earth, the agitation of their feathery wings, by the wind, ferving only to force them further down, till each wing shrivels at its bafe, and early breaks off. The fame economy is apparent in other fpecies of this and fimilar genera, but peculiarly admirable in that before us. It is analogouf to what has been obferved in the firt fpecies of Stipa; fee that article.

10. T. villifolius. Hairy-Goat's-beard. Linn. Sp. Pl. 1110. Willd. n. 10. Ait. n. 433. — Calyx longer than the corolla. Stem much branched, corymbose, clothed, like the bafes of the ovato-lanceolate leaves, with flagggy wool. — Native of Spain and Siberia; introduced at Kew, in 1794, by Mr. Hurnemann. Herb biennial. Herb as tall as T. porrifolius, but the flmen is very much more branched, and more flender, clothed with fiole, flattered, cottony wool, as well as with numerous, fhort, ovato-lanceolate, pointed leaves, those about the corymbose upper part of the flmen measuring from one and a half to two inches in length. Flowers a little drooping, pale yellow, rather smaller than thofe of porrifolius, on cylindrical ftriata flats. Calyx of about nine leaves, nearly half as long again as the corolla. Anthers brown. Rays of the feed-down rough, very woolly, with long, naked, taper points. This, at leaft, is an unquestionably diftinct species.

For Tragopogon virginicum, Linn. Sp. Pl. 1111. (Hyacinth praecox of Wild. Sp. Pl. v. 3. 1615.), as well as the two iftems of Linnaeus and Wildenow, fee TROXIMON.

Other Linnaean fpecies are feperated, as we have already faid, into a no fels diftinct and natural genus, for which we here retain Wildenow's name.


Gen. Ch. Common Calyx fimo, of one leaf, ovate, tu med at the bafe, deeply divided into eight equal, lanceolate segments. Cor. compound, imbricated, uniform. Flores numerous, all perfect, one petal, ligulate, abrupt, with five teeth; their tubes about the length of the calyx. Stam. Filaments,
Filaments, in each floret, five, capillary, short: anthers united into a cylindrical tube, projecting out of the tube of the floret. 

Pet. Germen in each floret: obsolete: style tumid and oblique at the base, with a kind of joint, then thread-shaped, straight, the length of the filaments; stigmas two, revolute. Peric. none, except the permanent closed turbinate calyx, shorter than the seed-down, finely reflexed. Seed: solitary, obsolete, oblique, angular, rough, each crowned: at an obtuse angle, with a flax, various in length, tumid and inflated at the base, bearing the foregoing feathery seed-down. Roots: naked, flat, roughish.


1. A. Dalechampii. Green-flowered Shrop's-beard. Willd. t. 1. Ait. n. 1. Sm. Fl. Græc. Sibth. t. 738, unpublished. (Tragopogon Dalechampii; Linn. Sp. Pl. 1113. Hieracium magnum; Dalechamp. Hist. 329, bad. H. purpureum, incis. foliis, montanum; Barcel. P. t. 109.)—Calyx finely downy, without bristles. Leaves rudimentary, toothed.—Native of Spain, the south of France, Italy, and the Levant. We have seen it, adorning sunny hills about Genoa, in the early part of a summer's day, when its copious large flowers, of a delicate sulphur-colour, purple underneath, make a fine appearance, intersected with the blue Catananche, and other handsome plants, while the great Myosotis sinuata is seen boldly fluttering over their blossoms. Miller appears to have cultivated this plant, which is a remarkably hardy perennial in warm dry situations, flowering from June to October, but not often seen in gardens. The stem is from two inches to a foot high, purpling at the base, leafy, roughish, as well as the alternate, clasping, rudimentary leaves, of which the upper ones are oblong, and nearly entire. Flowers: two inches wide, solitary, on very long, simple, terminal, round, rough, hollow stalk. Calyx green, covered with peculiarly felted-down. Flowers: hairy at the back. Stalk of the seed-down tapering, hollow throughout, nearly vertical, about three the length of the seed.

2. A. plicatus. Prockly-cupped Shrop's-beard. Willd. n. 2. Ait. n. 2. Sm. Fl. Græc. Sibth. t. 731, unpublished. (Tragopogon plicatus; Linn. Sp. Pl. 1111. Sonchus alpe; jugas cretaceus; Bubh. Prodr. 62.)—Calyx hispid, with prominent bristles. Leaves: toothed: the upper ones jagged; dilated at the base, clasping the stem.—Native of the south of France, and the shores of Italy, Sicily, Crete, &c. Dr. Sibthorp found it frequent in Greece and the Archipelago, especially among rubbish near the sea. He suspected it might be the Greater Hawkweed, Tragopogon pratensis, of Dioscorides. Curious cultivators: have often raised the plant in England, where it proves a hardy annual, but is too like a common Sow-thistle to be much cherished. The bark varies in luxuriance and roughness, but is not at all hairy. Lower leaves: ovate, tapering much at the base, where they clasp the stem: upper-greatly dilated in the same part, and furnished throughout with many sharp segments and teeth; their midrib prickly beneath. Flowers: several; bright yellow, not half the size of the former, on long, terminal, solitary, bristly stalks. Calyx: thin, covered with towy, rigid, projecting bristles. Seeds: dark brown, depressed, flat; as is the thin base of the otherwise slender, longish, and white stalk which sustains the snow-white feathery down.

3. A. ater. Rough Shrop's-beard. Willd. n. 3. Ait. n. 3. Sm. Fl. Græc. Sibth. t. 732, unpublished. (Tragopogon ater; Linn. Sp. Pl. 1111. Sonchus ater; subperundum fici; Bubh. Prodr. 62, no figure.)—Calyx hispid, with prominent bristles. Leaves undivided, toothed: those of the stem oblong, contracted towards the rounded clasping base.—Found on the shores of Montpellier, Italy, and Alizé Minor. Seen to. Kew by Mr. Richard in 1754. Annual, with the habit and flowers of the last, but the leaves are very different, at least those of the stem, which, instead of being dilated and deeply jagged, are merely oblong and toothed. The stalk of the seed-down more or less contains much more, though equally tumid at the base.

4. A. scoparius. Cape Shrop's-beard. Willd. n. 4. (Tragopogon capensis; Jacq. Col. v. 2. 420. Ic. Rar. 347.)—Calyx hispid, with prominent bristles, and deeply channelled. Leaves rudimentary, toothed: the upper ones arrow-shaped at the base, nearly entire. The seeds were received by Jacquin from the Cape of Good Hope, and produced biennial plants, three or four feet high, branched, having much of the appearance of a Sow-thistle, like our second species. But the leaves are much less dilated at the base, and the calyx is more deeply channelled, having eight tumid ribs, or angles. The slender and elongated stalk of the seed-down is very like that species, of which it is possible the parent may be but a variety. We know it only from Jacquin's work.

Tragopogon, in Gardening, contains plants of the hardy, herbaceous, biennial, and perennial kinds, among which the species mostly cultivated are, the purple goat's-beard, or Wildpea (T. porrafolius); the common yellow goat's-beard (T. pratensis); the crocus-leaved goat's-beard (T. croci folius); and the great-flowered goat's-beard (T. Dalechampii).

Tragopogon is cultivated in gardens under the name of tallage principally for the use of the root parts of the plant and the young shoots. The roots, when boiled or stewed, have a mild sweetsavour. The stalks are also cut in the spring, when they are four or five inches high, and drooped like alspargis, in which way they eat very tender and well.

Method of Culture.—The first is only raised from seed, which should be sown in the spring, in an open situation to remain, either broadcast and raked in, or in shallow drills eight or nine inches asunder, scattering the seeds thinly, and covering them half an inch deep: and when the plants are come up two or three inches high, they should be thinned and weeded by hand or the hoe, leaving them eight or ten inches asunder, repeating the weeding as required during the summer, which is all the culture they require, and they will have large roots by the autumn, as September or October, when they may be begun taking up for use; and in November, when the leaves begin to decay, a quantity be preserved in sand for use in time of severe frost, when those in the ground cannot be got up.

In the spring, when those remaining in the ground begin to shoot, the shoots, when a few inches high, may be cut for use, which, when quite young and tender, on being boiled, are excellent eating. A few plants should be suffered to run up to stalk every spring, to produce seeds. The shoots are brought to market in bunches during the autumn and winter seasons.

The two following sorts may also be raised from seeds in the same way, and the plants, when a little advanced in growth, may be pulled out if they are required for any variety in a particular part.

The third sort may also be propagated by parting the roots in autumn and spring, and planting them where they are to remain.

The first is cultivated wholly as a culinary plant, but the others afford variety in the borders of pleasure grounds, &c.
TRAGORCHIS, in Botany, from πεταλος, a goat, and Orchis, see that article, has been used by several old authors to designate certain species of that beautiful and curious tribe, whose flowers were thought to have a goat-like scent. Two in particular have thus been called; the Satyrium hircinum of Linnaeus, now Orchis hircina, and his Orchis coriophora.

TRAGORIGANUM, from πεταλος, a goat, and ὁργυνος, marjoram, a name applied by the older botanists to several plants, mostly belonging to our present genus Origania, which may be found in its proper place, or to some aromatic plants allied thereto. The original meaning of the word was founded in the idea of Marjoram being agreeable to goats, and especially of the Cretan Marjoram, or Dittany, being a sovereign remedy for such as were wounded by arrows. Tragoriganum notatum, Barford Goat-marjoram, Dalechamp Hif. 889, has indeed no connexion or affinity with other plants that bear this name, being the Libithum marianum, whose leaves only possess a flight resemblance to the ringent plants, without any of their flavour or qualities.

TRAGOSELIMUM, from πεταλος, a goat, and σελεως, parley, a name first used by Tabernaemontanus for the Pim- pinella saxifraga of Linnaeus, which some have called Tra- gium; see this article and Tragus.

TRAGULA, among the Romans, a strong kind of jelin, with a barb' head. Tragum, in Ichthyology, the name given by Aristotle, and others of the old Greek writers, to the trigum of Aelian, Athenæus, and Oppian. Both names are used to express the fish called by authors the poifinachs marina, and by us the fire-fish, or fire-faire.

TRAGURNIUM, in Ancient Geography, a town of Dal- matia, famous for its marble. Ptolkmy.

TRAGUS, a river of the Peloponnesus, in Arcadia. Pausanias.

TRAGUS, in Anatomy, an eminence of the external car. See EAR.

TRAGUS, in Botany, a name which has been variously applied. One πεταλος of Dioscorides, book 2. chap. 119, appears to be a kind of meal or flour. Hence perhaps Haller was led to use this name for a genus of grasses, now denominated Lappago; see that article. Such an application is like the old derivation of luca, "a non lucendo," of few of the tribe being likely to yield foa meal. Another πεταλος of the above Greek author, book 4. chap. 51, is described by him as "a maritime shrub, of humble growth, without leaves, whose branches are betel with a kind of reddish berries, the size of grains of wheat, pointed, and very aromatic." Whether this may be the Ephebra, or any thing else, it is difficult to determine. Valerius Cordus thought it Sedum album, which is a common Greek plant. We might rather indicate S. anglicum, were that found in Greece, the leaves, in both cases, being taken for berries. Camerarius gives Salsola Kali for the plant of Dioscorides, annexing an ab- stract of his description of its form and qualities, the former of which, at least, does not agree with this Salsola; any more than with S. Tragus, so called by Linnaeus, apparently because the name was at hand when he was intent on dislin- guishing it from S. Kali; see Amoen. Acad. v. 4. 310. We collect these particulars to shew the difficulty of the enquiry, as well as its mutility. Dioscorides is amusing enough, as a botanical riddle-book, because, while some of his descrip- tions are elaborate and precise, others are jull sufficiently vague to afford room for conjecture. Theophrastus, though far more philosophical, is in but a few instances clearly intelligible. The greater number of his plants are merely named, as being suppos’d well-known to his readers, and therefore he scarcely affords matter to found any conjectures upon.

TRAHINA, in Geography, a town of Sicily, in the valley of Demonas; 28 miles N.W. of Catania. Lat. 37° 40'. E. long. 14° 40'.

TRAHONA, a town of Italy, in the Valteline, on a small river which runs into the Adda, 2 miles N. of Morbegno.

TRAJAN, M. ULPNIUS TRAJANUS, in Biography, a Roman emperor, the fon of a distinguished commander under Vespasian in the Jewish wars, was born at Italica in the Spanish province of Boetica, entered into the army, and accompanied his father in several military expeditions; acquiring the hardihood, submitting to the discipline, and uniformly practising the duties of a soldier. In the career of public honour, he was first made praetor A.D. 86, con- skull A.D. 97, and raised by Nerva to the rank of Cæsar A.D. 97, being at this time in the 42d or 43d year of his age, according to the statements of different writers, and polishing a majestic stature, manly features, and dignified aspect. Upon the death of Nerva in the following year, Trajan succeeded, without opposition, to the imperial throne. He was at this time at Cologne, and remained for some time in Germany. In 99 he set out for Rome, and entered the city on foot, preceded by the lictors as an ordi- nary magistrate, and followed by a few soldiers exhibiting the demeanour of citizens. Affable in his manners, bountifull in his largesses to the Roman people, and anxious to procure a suppley of corn by allowing free importation from the colonies, Trajan acquired and maintained a very great degree of popularity. He likewise very much contributed to the tranquility and good order of the city, by removing to exile the infamous tribe of delators, who had been encour- aged by the tyranny of Domitian, and not sufficiently re- pressed by the lenity of Nerva, and by infusing an edict with some penalties against all false accusers. He also reduced the tax of the twentieth upon collateral successeions, imposed by Augustus, and formed a fund for the exercise of liberality by his own economy and frugality. He encouraged merit, and advanced to polts of true men distinguished by their in- tegrity and talents. He associated on the most condescending terms with perfons of various rank and condition, and treated the citizens of Rome in general more as friends than as subjects. Although his military education and employ- ments allowed him no leisure for acquiring the accomplish- ments of literature, he was the patron of learned men, and by founding libraries and other methods, he promoted the diffusion of learning. As he was moderate and frugal in his own habits, and in the entertainments he provided for his guests, he checked and restrained the prevalence of luxury and extravagant expenditure in others. By pursuing various methods for rendering the people happy, he obtained, by the unanimous voice of the senate, the title of "Optimus," which glorious distinction he retained through life and trans- mitted to posterity. In the third year of his reign he was honoured with a third consulat; and during his exercise of this office, Pliny pronounced that panegyric which is still extant, and which pretends to view a finished portrait of a perfect prince. In the following year, when he was again consul, he was engaged in a war with Decebals, king of the Dacians, from which he returned victorious, and obtained a triumph with the surname of "Dacius." Having spent the two following years in an attention to objects that contrib- uted to the improvement of the empire, one of which was the establishment of a port at Centuncelae, now Civita- Vecchia, the clofe of the latter of these years was ren- dered
dered important and interesting, by the appointment of Pliny, A.D. 103, as governor of Pontus and Britain, and by the correspondence to which this appointment gave occasion, and which pourtrays in the most pleasing characters the enlightened and benignant spirit by which he was actuated.

(See Christian Religion and Pliny.) In the following
year the war with Decebalus was reviewed, and on this occa-
sion Trajan constructed a bridge over the Danube, which
was long admired as one of the most considerable relics of
antiquity. When Decebalus had dispatched himself after
the loss of his capital, Dacia was constituted a Roman pro-
vince, and colonized from other parts of the empire. (See
Dacia.) Upon his return to Rome, he employed himself in
carrying on some works of public magnificence and util-
y; but success in his military expeditions unfortunately
clarified the innate propensity of war, which seems to have
been his most consummate felicity; and accordingly the sub-
sequent period of his reign was too ardently devoted to the
gratification of his ambition, in extending the boundaries of
the Roman empire. In the year 107, he reduced Armenia
into a Roman province; the whole of Mesopotamia was also
subdued; Arabi Petraea was likewise made a Roman pro-
vince; and all the barbarous tribes situated north of Armenia,
between the Euxine and Caspian seas, were reduced to sub-
mission. After the lapse of some years, of which no regu-
lar account remains, we find Trajan A.D. 114, dedicating
the magnificent forum, which he had constructed at Rome,
and erecting the columns on which his exploits are sculptured
(See Trajan and Forum); and also renewing the war with the Parthians.
In 114 he crossed the Tigris in a bridge of boats, and subdued Adiabene and the whole of Assyria; and having captured Cedigaph and Sura, he de-
defated the Tigris with his fleet, and had the honour of
being the first and last Roman general who navigated the
Indian ocean, ravaging the coast of Arabia Felix. He even
indulged the ambition of visiting India. On his return he
laid siege to Atra, the capital of an Arabian tribe, which
he was obliged to relive and to withdraw to Syria. In
the year 117 he was attacked with a paralytic disorder, attended
with Euphory, and he therefore hastened his return to Italy.
At Seleucia in Cilicia he had another attack, which proved
fatal. In his last moments, the emperor's Plutina secured
the adoption of Adrian for his successor. Trajan died in
the sixty-fourth year of his age, after a reign of nineteen
years and a half, and his remains were deposited under his own
column. This emperor's virtues were shaded by weakness
and vice. His passion for war has been already mentioned;
he was also addicted to sexual indulgences, of which inter-
course in drinking was the least scandalous. Notwithstanding
the blemishes of his character, his memory was long
held in veneration, inasmuch that 250 years after his death,
the senators, in their acclamations on the choice of a new
emperor, vociferated the wish that he might be "more fortu-
none than Augustus, and better than Trajan." Anc.

**TRAJAN COLUMN, a famous historical column, erected
in Rome, in honour of the emperor Trajan. See COLUMN, Cilica.**

**TRAJAN, in Geography, a town of European Turkey, in
Moldavia, on the Pruth; 16 miles N. of Galatz.**

**TRAJANA, or TREA, in Ancient Geography, a town of
Italy, in the province of Picenum. Pol. and Hist. Anton.**

**TRAJANOPOLIS, in Geography, a town of European
Turkey, in the province of Romania, on the Mariza. This
is an ancient town, and took its name from the emperor
Trajan, who repaired and adorned it: it afterwards became
very considerable, and now, though much reduced from its
ancient splendour, is still the seat of a Greek archbishop; 40
miles S. of Adrianople.**

**TRAJANOPOLIS, in Ancient Geography, a town in the
interior of Thrace, upon the banks of the river Hebrus.
In the Ist. Anton. this town is placed between Bresesc
and Cephal.—Also, a town of Lydia, near the sea, between
Antandrus and Aradus.—Also, a town of Asia, in Cilicia
Trachea, where the emperor Trajan died: the same
with Seleucia.**

**TRAJANOPOLIS, or Transpolis, a town of Asia, in Phrygia
Pacatiae.**

**TRAJANUS PORTUS, a port of Italy, on the coast
of Etruria, at the mouth of the Tiber; constructed by the
emperor Claudius, and repaired by Trajan, who rendered it
more secure and commodious, and gave it its name.**

**TRAJECTORIA OF A COMET, is its path or orbit, or the
line it describes in its motion.**

This, Hevelius, in his Compendia, will have to be
written nearly a right line; but Dr. Halley concludes it to be
a very eccentric ellipse.

Sir Isaac Newton, in prop. all. of his third book, shews
how to determine the trajectory of a comet from three
observations; and, in his last proposition, how to correct a
trajectory graphically described. See Comet.

This term is often used, in general, for the path of any
body moving either in a void, or in a medium that resists
its motion; or even for any curve passing through a given
number of points. Thus Newton, Princip. lib. 1 prop. 22,
proposes to describe a trajectory that shall pass through five
given points.

**TRAJECTUM, in Ancient Geography, a town of the
Batavii upon the Rhine. Trajectum is thought to be one of
the fifty main cities erected by Drusus in this country, to
fortify the course of its rivers. This town contained a
variety of vicissitudes, till at length it was established by the
Romans. It had the name of Trajectum Oppidum, in honour
of Ulpius Trajan. In its environs are found many ancient
remains. See Utrecht.**

**TRAJECTUS, a place in the isle of Albion, upon the
route from Collevia to Lice, between Abooe and Aquae
Salis. Anton. Ist. Antiquities are generally of opinion,
that Trajectus should have been placed before Abooe,
and that it was situated at Oldbury, where, as they suppose,
was a ferry over the Severn: but Mr. Horsley imagines
that Trajectus was situated at the passaghe over the Avon,
near Ilmham, 9 miles from Bath.**

**TRAJETO, in Geography, a town of Naples, in
Lavosa, near the mouth of the Garigliano, the seat of a
bishop, built on the ruins of the ancient Metternum; 6 miles
S.W. of Sezza.**

**TRAIGUERA, a town of Spain, in Valencia; 12
miles N.W. of Peniopolis.**

**TRAIR-BOARDS, in Ship-Building, a term for the carved
work between the cheeks of the head, at the heel of the
figure.**

**TRAILING ARBUTUS, in Gardening, the common
name of a curious ornamental plant. See Eugene.**

**TRAIN, the attendance of a great person, or the trail of
a town, or route of state.**

In Flanders, it denotes the tail of a hawk.

**Train is likewise used for the number of beasts which a
watch makes in an hour, or any other certain time. See
Watch-word, &c.**

**Train is also used for a line of gunpowder laid to give
fire to a quantity thereof, in order to do execution, by
blowing up earth, works, buildings, &c.**

**TRAIN or TRAIL of ARTILLERY. See Artillery.**

**TRAIN-
TRAIN-Band, or Trained-Band, a name given to the militia of England, particularly to those of the city of London.

Train-Oil, the oil procured from the blubber of whales, by boiling. See Whale and Whale-Fishery.

Train-Roads, a flight kind of rail-ways for small wagons, used in mines.

Train-Scout, in the Manege, a method of trying the speed and goodness of the horses defined to the sport of hunting, so denominated because the scent which the hounds hunted, proceeded from some animal which had previously been trained along the fields and over hedges and ditches, according to the pleasure of the person who trained or dragged it after him. The rival horses were to follow the hounds which hunted this scent, and give proofs of their speed and merit, in competition with one another. Of all chaces this was reckoned the swiftest and most trying, because the scent lies the hottest; so that the hounds run all the time at the utmost stretch, and the horses must have been exerted to their utmost powers to keep pace with them. Besides, in this manner of hunting, the sport was always ready when a fox or hare might not easily be found; and this mode of matching and running hunters, in order to try their speed against one another, while they followed the dogs, was thought to be more cheerful both to the riders and horses, than to make them run simply against one another, or against time, as the present practice is. When neither the hunting of the hare, nor the running of train-scents, could not decide which horse is the best, recourse was had to another kind of chase, called by horsemen the _wild-game chase or chale. See Chase._

Train, in Geography, a river of France, which runs into the Dyle, about 9 miles S. of Lovain.—Also, a town of Bavaria, on the Ambs; 5 miles S. of Ahensperg.

Traina, a town of Sicily, in the valley of Demona, on a river of the same name; 56 miles S.E. of Cefalu.

Trained Trees, in Gardening, such young fruit-trees as are designed for walls and espaliers, being trained in the nursery to the intended form, by planting them against any kind of walls, pales, reed-hedges, or other close fences; when a year old from the grafting or budding, training them in the manner of wall or espalier trees, for two, three, or more years, till they obtain a good spread of branches, and are arrived to a fruitful state, in order that those who are in haste to have their walls or espaliers covered at once with bearing trees, may have it accomplished in one season. The trees thus trained in the nursery, &c. on being planted out in autumn or spring to the places intended, cover the wall or espalier in some manner at once, and often bear fruit the ensuing summer, when the feaon proves favourable for the purpose.

In the public nurseries, large quantities of these sorts of trees are always kept ready trained for sale, particularly peaches, nectarines, and apricots for walls; in many places also, cherries and plums, &c. like-wise apples, pears, and other fruit-trees, for espaliers; and are proper to furnish the walls and espaliers of new gardens, and occasionally those of old ones, to bear fruit till younger trees, planted untrained, become fruitful, or for supplying the places of old trees that fail, or bear bad fruit. In all cases of this sort, this mode of planting may often be adopted with great propriety and benefit, and besides much time and trouble be saved by it, in waiting for the trees to become in a bearing state, as well as the expense which is constantly incurred in carrying on the operations and processes of preparing young fruit-trees. The difference in the prices of trained trees over those of untrained ones is a mere trifle, and of no consideration in such undertakings. Therefore, in all nurseries some of the belt sorts of these trained fruit-trees, both for walls and espaliers, may be kept ready for these purposes with great utility and advantage.

When, of course, it is intended to raise trained fruit-trees for walls and espaliers, a quantity of the best young plants of the respective sorts, dwarf and half-standard, of one year old, with the first shoots from the budding and grafting entire, should be planted out in autumn against some kind of fence in a free open situation, not less than four or five feet high, placing them from five to six to eight or ten feet distant, to remain for training. These in the spring following, just as they begin to make an effort for shooting, should be headed down, with a clean sloping cut upward, to within four, five, or six eyes or buds of their origin, or place of insertion in the stock, especially those intended for dwarfs, and the half-standards, if worked on tall flocks; which prevents their running up too high with a single naked item, andcauses them to throw out lateral shoots from the lower part to fill the wall or espalier regularly with branches quite from the bottom upward; as they soon after push forth strong shoots from all the remaining lower buds, sufficient to give the tree its first proper formation as a wall-tree, &c.; which shoots, when advanced in length in summer, should be trained along to the fence equally to the right and left, in a somewhat slanting or inclined present at full length till next spring, when these shoots may also be cut down to the length of six or eight inches, to force out a further supply of more branches near the bottom, as it is proper that they should be well furnished with branches below, in order to cover the wall, &c. at the bottom part, that none of it may be lost or left in an uncovered slate.

The summer's shoots should be shortened in this manner; more or less the two or three first springs, as may be necessary, in order to obtain a proper spread of lower branches to give the tree its intended form; though this work of cutting in short to obtain laterals, may also be performed occasionally in summer, in May or early in June, on the strong young shoots of the year, cutting or pinching them down to a few eyes; but the first is the bell mode. This last mode, by forcing out lateral shoots the same year, often saves time.

As the supply of branches thus obtained arrive at proper lengths, in the summer they should be all trained in along close to the wall, and if any fore-right or back shoots come out, they should be rubbed off close, leaving all the well-placed side and terminal shoots in every part, and letting the whole, or as many as possible, be trained in during this season, to have a plenty to choose from in the general pruning. Feasions of winter and spring, laying them in close to the wall, &c. equally to the right and left, on each side of the tree, in a spreading somewhat horizontal or fan-like manner, no where crossing one another but at parallel distances, and mostly all at full length during the summer's growth, to remain till the general winter or spring pruning.

In the winter pruning, where more wood was trained up in summer than appears necessary, or that can be trained in with due regularity, it should be retrenched, as well as any remaining fore-right or back shoots and other irregular growths omitted in the summer, be now all pruned out, cutting them quite close to their origin. The whole should then be close-nailed to the wall, in somewhat the fan manner, removing in the first place all the irregular side and other shoots of the different branches before they are laid in and nailed. See Pruning.

Having thus procured proper heads, they should afterwards be pruned or cut in according to the method peculiar to
to each respective fort, as directed under the culture, some requiring the branches to be shortened annually, others to be mostly trained at full length. See Dwarf and Espalier Trees, Pruning, &c.

The training of espalier trees is effected exactly in the same manner, only these may be trained as they stand in the nursery lines, in the open quarters or borders, &c. by ranging some stout flakes in the ground along one side of each tree, not in a continued straight range immediately the way of the row, but those of each tree ranged separate and obliquely, somewhat crosways the row as it were, that the branches of the different trees may range beside one another, and thereby have more room to extend the branches both ways, than the common distance in the nursery lines would admit, if ranged directly the way of the row.

It may be noticed, that occasionally it may happen that some particular trained trees of both the wall and espalier kinds may assume in the course of their training a state of extremism vigorous and luxuriant flowering and growth either in the whole of them, or in some particular parts, by which very strong rampant, rude shoots that have a peculiar unfruitful-like nature and appearance are sent forth, which in all such cases and circumstances should be ordered and directed in a particular manner, according to their nature and situation, until they have in a great measure exhausted their too great abundance or redundancy of sap which caused their excessive luxuriance, and they begin to take on a more moderate state of flowering and growth. In consequence of which, therefore, wherever there appears to prevail a general luxuriance and excess of growth in the whole trees, or parts of them, while under the course of training, or afterwards, it will be advisable to use proper and necessary caution in the way of pruning, employing the knife in rather a moderate manner in the way of thinning out and shortening the branches, and in some degree humouring, as it were, the trees in their natural tendency of flowering and growth, by leaving the young shoots and branches thicker and closer together than what is the common rule in all such cafes, the whole being left at their full lengths particularly during their summer’s growth: and to all those which are usually shortened in their winter pruning, as in the peach, nectarine, and other similar sorts of trees, it should be shortened much less in proportion than the other kinds; but those of the apple, pear, plum, cherry, and others of the same sorts, should always be continued at their whole lengths; that, on the whole, by thus dividing the sap-juice among a greater number, as well as larger extent of branches, that luxuriance may be checked which would take place in the cafes of a smaller number and less extent of growth. As, in general, the more wood can be cut out of a vigorous flowering tree, and the more the shoots are shortened, practices which are erroneously too frequently had recourse to, the more vigorously it will continue to shoot, without ever becoming properly fruitful; and if severe cutting-in be repeatedly practised and continued, the tree will often exhaust itself so greatly by its luxuriant flowering, that it suddenly becomes in a weak, imperfect, and decayed state of growth. But, on the contrary, if the natural inclination of the very vigorous-flowering young trees be somewhat confuted and indulged, in the first instance, by training in as many branches as can be conveniently had for the purpose, and those which require shortening, be cut in moderately only, or some which are very luxuriant hardly at all, and these methods continued to be practised for two or three years with proper direction, the trees will be gradually reduced to a moderate state of growth, and good condition of bearing, after which they may be managed and directed in the common way which is proper for each of the different sorts.

And, on the other hand, such trees as are only vigorous in particular shoots, may, in some cafes, have such shoots radically retrenched, but in others reserved; and if a very vigorous shoot runs considerably stronger than all the rest, and seems to support its vigour at the expense of the others in its vicinity, it should be retrenched to its very origin as early in the summer as it is perceived: in other cafes, if a luxuriant shoot arises in any vacant space, especially towards the bottom part, where a supply of more wood is wanted, it may be retained, and pinched off or topped down to a few eyes in the late spring or beginning summer months, when it will send out several lateral shoots below, the same season, and instead of one rude luxuriant shoot, there will probably be four, five, or more of a moderate growth to fill the vacancy in a more effectual manner, and which will much sooner attain the state of fruitfulness.

The trees having been thus in training in the nurseries for the space of three, four, or five years, they will have obtained a handsome spread of fruitful branches fanned in the regular proper and necessary forms for the different purposes which are intended, so as that when planted out, they may at once cover a large space, and become quickly fruitful and productive. The particular method of culture which is proper for each of the forts, is more fully given in speaking of them individually under their several heads.

But it may be remarked that, in general, unless good trained trees can be readily obtained, of from three or four to five or six years old, of a clean free growth, it will be better to plant entire young untrained trees of one or two years old, immediately from the nursery, putting them at once where they are to remain, managing them afterwards as the trained trees, to give them the proper form of head.

Some, in order to have as great a chance as possible, plant young untrained trees to remain, and trained trees of a bearing flat, dwarfs and half standards between, to cover the wall more effectually at once, and furnish a supply of fruit, until the young ones are trained and arrive at the bearing flat; then, according as the trees of both sorts advance in that state of growth, those which appear the most prosperous are retained, and the others are gradually cut away, leaving the most thriving trees to occupy the wall wholly at last.

In most of the public nurseries, they raise trained trees for sale, which occupy all their close fences of walls, pales, &c. where they may be procured of almost any size, differing in price from three to five or ten shillings or more per trees, according to the sorts, age, and goodness of growth. See Trainer, in Geography, a town of France, in the department of the Aube; 6 miles S. of Nogent fur Seine.

TRAINING, in Planting and Gardening, the practice of regulating the forms and growth of forest and fruit trees, by the proper topping and retrenching of their side or other branches in the first kind, and by the cutting-in and distribution of their shoots and branches in the latter. What is principally necessary in the management of the former of these sorts of trees, in this respect, has been already pointed out under the heads to which it properly belongs. See Pruning and Timber.

And in regard to the latter, or garden kinds of trees, it has been remarked, that when by mixtures it is properly a practice much connected with that of pruning, and which is employed, either for the purposes of protecting exotics of the tender fruit-tree kinds from the wind, for improving their climate by spreading them in a regular manner upon a wall or fence, or for supporting climbing or training
trailing plants. In the first case, it is performed in a great variety of modes and manners, according to the nature and kind of support which is made use of for the purpose. In the second intention too, it is done differently, as the circumstances may be, and mostly against walls, as in the fan and horizontal modes; the former of which is said to be calculated for fonnet covering the walls, and to be likewise the most proper for such kinds of trees as do not abound in superfluous wood, as the cherry, peach, and apricot. The latter mode, however, is said to fill the walls more completely, though longer in accomplishing the business; and to be the best suited for such trees as run much to wood, as is the case with many apple and pear trees. See these different sorts of trees.

In the work of training for the support of climbing plants, nature fhould, it is suppos'd, be imitated as nearly as possible. That with the kinds which twine round other trees or supports, or that fallen themselves to walls, nothing more is thought necessary, than to put them on similar objects which are within their reach; but that with others, which support themselves by claspers or tendrils, it is requisite to fallen them by art when these claspers fail; which, in nature, is commonly the second year; when the whole twining shrub or climber falls down, or hangs by its last formed tendrils in such a manner, as that its shoots are bent, twisted, or inclined in almost every direction. This is the case with many sorts of tree plants, such as vines, passion-flowers, and others, and strongly suggests the advantage of training such kinds in a twirled or a pergament manner; as nothing can be more unnatural than to train them in an upright mode, as is too commonly done with the firft of these sorts, where set against the back walls of hot-houses, &c. In training them along a trellis, under the sloping glafs of such houses, they are said to be in a more natural sitution, and are more likely to send out shoots, or to break, as it is often termed, at every joint; but full experience has, it is thought, proved the vaft advantage of training in a pergament or twisting direction in every situation. In a great many houses of the above sort in all parts of the country, nearly two-thirds of the crops which might annually be produced, are, it is suppos'd, lost for want of attention to this circumstance. And, that as the practice is natural, uniformly successful, so far as it has been yet tried, and without injury, it ought to be more generally had recourse to in the buildings.

Great ufs and benefits are capable of being taken of the fame principle in the training of other sorts of trees; as whenever the sap is constrained by twilling a shoot or branch, it is sure at such places as are most bent, or which have most of the angle of the curve, to send out a shoot, as has been well noticed, illustrated, and taken advantage of by both ancient and modern writers on horticulture. See Hitt's and Forbyth's Treatises on Fruit-Trees, &c.

In the training of fruit-trees, few who have been engaged in the work have, it is suppos'd, fully understood or sufficiently availed themselves of the advantages which might be taken of this general law in vegetable economy, that the extreme branches bent downward, or the extreme roots turned upward and exposed to the air, throw the tree more or less into a fruiting state. It has lately, however, been done by turning the branches of such trees over the tops of walls, or in other modes, with astonishing effects in the production of fruit. The great effects of this sort of training are evident too in many other inftances, where bends, twills, and downward directions are given to shoots and branches by different circumstances in the objects to which they are trained. The powerful and excellent effects of cutting the roots of trees either at some distance from or near to the chief item, as well as those of cutting the item itself, in order to throw them into a fruiting condition, have, it is said, been fully recorded by former writers on gardening, and been recently practifed with complete success. See Espalier Trees, Pruning, Trained Trees, and Wall-Trees.

TRAINING, or Tracing, in Mineralogy, a term used by our miners to express the tracing up of the mineral appearances on the surface of the earth to their head or original place, and there finding a mine of the metal they contain: or, training or tracing a lode, denotes the same with backing of it; that is, laying open the bryle, and discovering the back of the lode, by many pits for several fathoms in length, eait and west. The bryle of a lode, is that mineralized subsidence which lies loosely upon the top of it under the loose mould and rubbish of the earth.

The principle on which this practice depends, is the change wrought in the face of the earth by the deluge, of the effects of which these remains are a very great proof. The superficial or upper part of veins, or lodes of ore, is always the poorest, the richer ores lying deeper down, the poor ones only serving to lead the way. These poor ores, or lodes impregnated with the metallic matter of the mine, and called by our workmen fford-lodes, were, probably, at the creation of the earth, brought regularly up to the surface, and shewed the place of the metals below. But at the time of the covering of the earth by the waters of the deluge, they were, with the ref of the surface, washed off, and carried with the defcent of the water down into the plains, or into the beds of rivers, and there carried many miles down the stream. This being an allowed truth, the art of training a mine is easy; for though this carrying of the fford-lodes and poor ore was done so many ages ago, yet all the way that fome pieces were carried on, others would be deposited by the way, and the heaviest and richest falling first, the lighteft would always be carried farthest, and there would be always left a fream of the matter all the way from the place where it was first produced, that is, where the mine now is: for the breaking of the furface of the earth at this great catastrophe was not fo deep as to reach that, and this fream or train of matter will be found richer and richer as it approaches the mine, and finally will flop at the place where it is.

Where there is suppos'd to be a mine of any metal, the hills and country all about are diligently searched; the situations and defcent of the lands, and the earth, lones, and other soluble bodies, are examin'd, particularly the colour and nature of the various forts of earths and lones which are found on the hills where the mine is suspefted to lie, that they may be readily known again if any of them are found in the neighbouring valleys. The lones which denote the lodes, and are called fford-lones, are found two, three, four, or even five miles from the hills where they originally lay; but if the fame fort of lones are remembered on the hills, the train is to be made out. After any great land-flood, in which it is suppos'd there are usually some new frets made in the banks of the rivers, these are carefully examin'd, to see whether any metallic lones may be found in their sides and bottoms, all being then so clean, that the smallest fford-lone may usually be seen. If no lones of this kind are found, it sometimes is of ufe, in order to farther researches, to examine whether any pieces of earth, of a different colour and nature from that of the rest of the bank, be found; for these being, if any such are found, washed also from the neighbouring hills, afford a great direction which side of the hill to search into.
If no shoad-stone or grews of a different nature from the
several be found in thee frets or newly worn banks, the miners
leave the place for the present. For though the bed of the
river afford many metalline stones, they never regard them,
the continual change of place they receive from the current
of the water rendering them only tokens that there is metal
somewhere in the country; but they confound and perplex
rather than instruct in the search after the places where
it is.

If there be found indeed stones of the shoad-kind, full of
protuberances, or having sharp angles, as if newly broken,
it may be worth while to see whether they are not washed
out of some part of the neighbouring banks by the late floods;
as this fort of appearance is a token of their having been
newly taken into the bed of the river. But if they are
rounded and smooth, it may be concluded they have been
long subject to the action of the water, and brought, per-
haps, many miles from the places where they were; origin-
ally lodged in the earth, and where only they could have
been of any use to the tracers of the mine.

When the frets in the sides of rivers have been traced in
vein, the searcher after a mine goes up to the sides of the
hills most suspected to have mines in them, and there seeks
for a convenience of bringing a little stream of water to run
down. When this is found, he cuts a trench about two feet
over, and as deep as the shelf. The water is turned into
this cut, and after two or three days running in it, all the
sink will be washed away, and the looe part of the earth
cleared off; and if any shoad-stones are lodged within the
whole course of this cut, they will be found. If any such
are found, it is an unquestionable proof that there is ore in
the higher parts of the hill; this encourages the work, and
there is always a found, or at least a split, which will,
without much danger, repay the expense and trouble. The
fquets are flat parcels of the ore, lying in different and dif-
tinct places of the hills, and not communicating with one
another.

Sometimes a great deal of this labour is saved, and the
shoad-stones are found on the surface of the ground, either
turned up by the plough, or thrown up in small quantities
in mole-hills, or raised by some other accident, for they are
f seldom found naturally lying on the very surface of the
earth; for the putrid remains of vegetable and animal sub-
stances, and other adventitious matter, has raised the
surface of the earth in all places, since the time of the
flood, and made indeed a sort of new surface. These
stones were certainly laid bare on the surface of the ground,
at the time of their being carried down from the mines; but this adventitious matter has buried them in
this long tract of time, and they are generally found under
about a foot or a foot of vegetable mould. If, by any of
these searches, a shoad is found, the miners have nothing to
do but to follow it to its head, and there make the opening;
but if no such direction can be had, nor any shoad found,
and there is yet suspicion that there is a mine in the hill,
the method is to make an effay-hatch, as it is called; this is
funk near the foot or bottom of the hill, and is an opening
of about six feet long, and four feet broad, made in search
of a vein as deep as the shelf; this is a caution that must
be always carefully observed, for if they are made less
than this, they may mislead of the vein, though there is one.

And the sinking thus deep is always attended with certainty,
for if no shoad is found on this, it may be concluded there
is none there; except that sometimes it is found that the
shoad has been washed clean away, within two or three feet
from the land; and then the lode or vein is two feet farther
or thereabouts up in the hill. If any shoad is found in the
effay-hatch, there is a certainty of a vein of ore; neither
doth it add a little toward the making of a conjecture how
high up the hill, or how far off the vein-diring, or bonny, is,
carefully to mark how deep from the surface of the earth
the shoad lies, for this is held an infallible rule, that the
nearer the shoad lies to the shelf, or flat ground, the nearer
the vein itself is, and vice versa.

When there is no shoad or appearance of a mine found in
the first effay-hatch, if the conjecture of a mine being in the
hill has any tolerable foundation, the tracing it does not end
here; but they go ten or twelve fathoms up the hill, and
there open a second effay-hatch, and if no ore or shoad-stone
is found in this, they go as many fathoms on each hand at the
same height with the second hatch, and there open a third
and a fourth hatch, of the same depth and dimensions with
the first; if in neither of these there is found any shoad-
stones, they ascend proportionally with three more hatches,
if the space of ground require, at every ten or twelve fathoms,
and in this manner open them three abreast, at twelve fathoms
distance up to the top of the hill. If no shoad is found in
any of these, it is concluded then that there is no tracing of
a mine there, and the hill is left.

If any shoad is found in any of these hatches or openings,
the ascending hatches from this are kept on in a direct line,
and the deeper the shoad lies the nearer the vein is. The
shoad grows gradually deeper from the surface, but higher the shelf
as they approach the mine: as suppose it to be but half a
foot from the shelf, and fewer feet from the surface, the vein
is then concluded to be within a fathom or two; and on this
the first proportion of twelve fathoms between every hatch is
leffened to fix, four, two, one, or even less than that, as the
vein is conjectured to be more and more near.

It often happens, for want of a good guide in this matter,
that the diggers over-shoot the lode; that is, they open their
next hatch too high up the hill, or above the lode or vein: this
is a mistake easily discovered, and easily rectified. If a
shoad is found lying near the shelf in one hatch, and in the
hatch above there is no shoad at all, it is a proof that the
hatch is too high, and the remedy is only to sink a hatch at
a middle distance between the last two, which will probably
fall upon the very point of the lode, and finish the work of
tracing.

Sometimes it happens, that in continuing the tracing of
the first shoad, a second or new one is found: it is not
uncommon for two hoads to be thus found in one hatch, and
this is easily discovered without any danger of mistake; for
suppose in the last hatch the shoad which they trace lay at
eight feet deep, and in this it lies at ten feet, and besides
this there is a shoad found at two feet depth: it is very certain
that the shoad at ten feet deep is the same they were before
tracing, and this is a new one pointing to another vein or lode,
which is now first discovered to near the surface of the earth.
This has generally gravel or earth mixed with it, and is to be
carefully examined: when the higher hatches are opened, this
is continually found as well as the old lode: and when the
shoad is traced to the point of the vein, this second is to be con-
tinued in the same manner, by other hatches opened at the
same distances above: it often happens, that in tracing this
second lode, the hatches dug for it discover another new
one, or a third shoad; all these are to be traced over the
other by the same hatches, and will all be found worth
the seeking after.

The old writers on mineralogy agree with us in this ob-
servation, and tell us, it is not uncommon in some places
to find as far as seven lodes lying parallel to one another
in the same hill. In these cases, however, there is usually one
master-lode, or a grand vein; the other six, that is, three on
each.
each side, being the lesser or concomitant veins. Five in the same manner sometimes lie in this order, the grand lode in the middle and two on each side; but the more common method is three, a large one, and two smaller.

Every lode has a peculiar coloured earth or gravel about it, which is found also with the shoad, and this always in a greater quantity the nearer the shoad lies to the lode, and becomes lessened by degrees to the distance of about a quarter of a mile, farther than which that peculiar gravel is never found in any quantity with the shoad; so that this is a proof that the lode or vein is near, when it is found in any quantity.

A valley may chance to lie at the foot of three several hills, in such a manner as to contain three several greats, or that earth which was moved with the shoad in the conclosure of the irata at the deluge, with as many different shoads or trains of shoad-lomes in the midst of each; in this case it will be very necessary to know the call of the country, and of each hill in respect to its grewt, for the furter training of them one after another as they lie in order; according to the foregoing rules of efflay-hatching, the uppermost in this cafe always directs which hill to begin with first.

It sometimes happens, that after having trained the shoad found in a valley up to the upper parts of a hill, there is only a squash, or bonny, found instead of a right vein of ore; for these detached parcels of ore have their shoads as well as the right veins. These are usually about two or three fathom long, and a fathom broad, few of them are larger, most least, and they never communicate with any other lode or vein, nor ever fend forth any of their own. The extenuations of these beds of ore terminate without sending out any frings, not lying within walls as the lodes; but though they are in the shelf or fall ground, not moved by the shoad, their surface is equal every where with that of the imaginary shelfy one, and they go down five or six fathoms deep, and there terminate at once. The ore contained in these is rich, and they are always wrought out to the considerable advantage of the owners.

These are the general rules of tracing mines, and though somewhat tedious and expensive, they are certain, and never subject to the error and disappointment the other shorter ways, as they are called, are liable to. These short ways are by the virgula divinatoria, or the hazel-wood, whose bending in certain places without any external visible force, is to point out where the place the vein of ore lies; the waters thought to infuse from the particular lodes, are also used by fome as a short means of finding the veins; other of these ways are also by mineral streams and effluvia, by the barrens of the foil, and the pitching of nocturnal lights on the fupposed orifices of mines. But these methods are too extravagant or too uncertain to be used in cafes of fo much consequence.

Another way of discovering lodes, is by working drifts across the country, as it is called, that is, from north and south, and vice versa.

When the mine is found by the more certain rules of tracing, the digging of it is a matter of less difficulty. Phil. Trans. No. 69. See Mineralogy, and Pryce's Mineral. Cornub. book i. cap. 1.

Training of Cattle, in Agriculture, the practice of taming and breaking in oxen and other neat cattle for the purpose of team-labour. It is performed in many different ways in different districts and places; but principally by first gradually accustoming them to be led by means of a halter or rope, and then usinf them to travel in other forts of teams after the yoke or harnets has been put on and rendered familiar to them; when afterwards they may be wrought in the plough-teams with the old labouring oxen, being placed between them both before and behind, and with such as are not too free workers. See Team, Yoke, and Yoking.

TRAISENDORF, in Geography, a town of Germany, in the principality of Culmbach; 5 miles N.E. of Baveuth.

TRAIT, Fr. Trattus, is the name of an ancient musical character, called likewise in old Latin treatises, plia; which fee.

TRAIT, or Tedia, in Geography, a town of Romania, on the Mariza; 12 miles S.W. of Filippepol.

TRAITOR. See TRAYTOR.

TRAITOR'S Cove, in Geography, a harbour on the west coast of the island of Revilla Gigedo, in the North Pacific ocean; so called by captain Vancouver, from the circumstance of being attacked, and two of his men wounded, by the natives of this place. N. lat. 55° 40'. E. long. 228° 31'.

TRAITOR'S Head, the north-east point of Erromango, one of the New Hebrides, so called by captain Cook in 1774, from the treacherous conduct of its inhabitants. S. lat. 18° 43'. E. long. 160° 28'.

TRAITOR'S Islands, a cluster of small islands, in a bay of the Pacific ocean, on the coast of New Guinea. S. lat. 10' 12'. E. long. 137°.

TRAITOR'S Island, an island in the Pacific ocean, discovered by Le Maire and Schouten in 1616, and so called from an attempt made by the natives to seize the vessel. M. Peroufe discovered this island to be divided into two parts, by a channel about 150 toises wide. It belongs to the Friendly islands, and is called by the natives Neocota-boatboo; 16 miles from mount Cocos. N. lat. 15° 55'. W. long. 173° 48'.

TRAITOR'S Island. See Keppel's Island.

TRAITTE. See Foreign Traitte.

TRALEE, in Geography, a post-town in the county of Kerry, Ireland, pleasantly situated at the bottom of Tralee bay, on the banks of the river Lee. It is the shire and assizes town of the county; was incorporated in 1612 by James 1; and fends one member to the imperial parliament. There were formerly four strong cells erected in this town, of which only one remains, which was the chief residence of the Desmond family, in which they exercised their jurisdiction during the continuance of the Palatinate. Tralee bay is shallow and unsafe, and therefore not much frequented. Near the town is a chalybeate spring, which is drunk medicinally with fascets. Tralee is 144 ½ miles S.W. by W. from Dublin, and 48 S.W. from Limerick.

TRALLEBOURG, a sea-port town of Sweden, in the province of Skone, near the Baltic; 19 miles S. of Lund. N. lat. 55° 20'. E. long. 12° 54'.

TRALLES, Balthasar-Lewis, in Biography, an eminent physician, was born at Brielau in 1708, and having studied medicine at Hall under Frederic Hoffman, settled in his native city, where he gained great reputation. His works were numerous and valuable, and caused him to be admitted into the Imperial Academy at Vienna, and the Royal Society of Berlin. But his most celebrated work was that on opium, entitled "Uetus Opif fiaburis et noxius in Morborum Medela, solidis et certis principiis superfructus," 1757-1762, 2 vols. 4to. He also published a treatise against the materialism of La Mettrie. He declined, in 1767, accepting the offer of first physician at Warsaw to Stanifans, king of Poland, partly on account of his advanced age, and principally from his attachment to the reformed religion. Haller. Eloy.

TRALLIA, called also Troadoidea, in Ancient Geography, a country of Illyria.
TRALLIANUS, in Botany, was so named by Loureiro, from whom alone we have any knowledge of this genus, in memory of Alexander Trallianus, a celebrated physician and naturalist, whose works are said to have been published at Paris in 1543, and republished by Haller in 1743. He wrote a letter on intestinal worms, which is mentioned in Dryander's Bibl. Banks. v. 2. 356; but we find no traces of his botanical information. Loure. Cochin. 157.—Cliffs and order, Pentandria Monogynia. Nat. Ord. Monadelphia. Juff.

Gen. Ch. Cal. Perianth inferior, of five short, rounded, permanent leaves. Cor. Petals five, oblong, spreading, reflexed, longer than the calyx. Nectary large, erect, with ten notches. Stam. Filaments five, short, inserted into the receptacle; anthers roundish, of two cells. Plum. Germ. superior, roundish; style the length of the stamens; stigma (simple?) Pericarp. Berry roundish, of two cells, with two seeds, which are angular on the inside, rounded externally.


1. T. leadiens. Cic. râe of the Cochinchine.—Found running up all kinds of trees in Cochinchina. Stems numerous, thrubby, long, climbing, without thorns or prickles; their branches copious, jointed. Leaves alternate, roundish-heart-shaped, pointed, crenate, smooth. Clusters lateral, forked, each on a long common stalk. Flowers of a whitish green.

TRALLIANUS, in Biography. See Alexander Trallianus.

TRALLICON, in Ancient Geography, a town of Aria Minor, in the vicinity of Caria, watered by the river Harpasus.

TRALLIS, or Tralles, a town of Asia Minor, in the interior of Lydia, which, according to Strabo, was rich and populous, and strongly fortified by nature. According to Plutarch, here was a temple of Victory. The town had been denominated Anthéia, Eunapia, Selicula, and Antiochia.

TRAMOS-MONTES, in Geography. See Tramos-Montes.

TRAM, in the Silk Trade. See Silk.

TRAM-ROAD, the same with Rail-ROAD; which see.

TRAMACASTRE, in Geography, a town of Spain, in Aragon; 12 miles S.S.E. of Albarazin.

TRAMANDI, a town of Brazil, on a river of the same name, which runs into the Atlantic, S. lat. 27° 15'.

TRAMARICUM, in Ancient Geography, a place of Africa Propria, upon the route from Carthage to Alexandria, between Scina and Abydorm. Ant. Itin.

TRAMAYE, in Geography, a town of France, in the department of the Saone and Loire; 9 miles W. of Micon.

TRAMAZA, a town of Sardinia; 8 miles from Oristagui.

TRAMLING of Tin-Ore, among Miners, is the washing of it very clean, which is done with a thovel, and in a frame of boards. See Tin.

TRAMIN, in Geography, a town of the county of Tyrol, on a small river which runs into the Adige, 8 miles S.S.W. of Bolzano.

TRAMIS, a word used by some medical writers, to express the line running along the middle of the scrotum from the penis to the anus.

TRAMMEL, an instrument or device, sometimes of leather, more usually of rope, fitted to a horse's legs, to regulate his motion, and form him to an amble.

It is also taken in many places for an iron moveable instrument in chimneys, to hang pots over the fire.

TRAMMEL-Net, or Tramel, is a long net with which to take fowl by night in champaign countries, much like the net used for the low-bell both in shape, size, and meshes.

The word comes from the French tremail, formed of the Latin tremalum or tremalus; of trees and macula, because it is composed of three rows of meshes.

To use it, they spread it on the ground, to the north or farther end, fitted with small plumbets, may lie loofs thereon; then the other part being borne up by men placed at the fore-ends, it is thus trained along the ground. At each nine are carried great blazing lights, by which the birds are raised; and as they rise under the net, they are taken. See Lark.

TRAMMELLED, in the Muses. A horse is said to be trammelled, that has blazes or white marks upon the fore and hind-foot of one side; as the far foot before and behind. He is so called, from the resemblance the white feet bears to a half-trammel.

TRAMMELLED, Horse, Crest, is one that has white marks in two of his feet that stand crofs-ways, like St. Andrew's cross; as in the far fore-foot and the near hind-foot, or in the near-foot before and the far-foot behind.

TRAMMELS, in Mechanics, an instrument so called by the joiners, and used by them for drawing oval upon boards. One part of it consists of a crofs with two grooves at right angles: the other is a beam carrying two pins which ride in those grooves, and also the describing pencil. All the engines for turning ovals are constructed upon the same principles with the trammels: the only difference is, that in the trammels the board is at rest, and the pencil moves upon it: in the turning engine, the tool, which supplies the place of the pencil, is at rest, and the board moves against it. See a Demonstration of the principal properties of these instruments, by Mr. Ludlam, in Phil. Trans. vol. lxx. part ii. p. 178, &c.

TRAMONNEL, in Geography, a town of France, in the department of Mont Blanc; 14 miles W. of Chambery.

TRAMONTANE, or Tramontane, formed from the Italian trae, of the Latin trans, which signifies beyond; and mons or mont, mountain; something beyond, or on the farther side, the mountains.

The term is particularly applied, by the Italian painters, to all such as live on the other side the Alps, i.e. all out of Italy; as the Germans, Flemish, French, &c.

The French lawyers give the same title of tramontane, or ultramontane doctors, to the Italian canonists, Gomez, Holleinits, Panorm, &c. who go upon rules and maxims too favourable to the court of Rome, and contrary to those of France, &c. On the Mediterranean, and in Italy, a north wind is called tramontane, a tramontane wind.

Some also call the pole-star, tramontana. Hence the proverb, to lost the tramontane; that is, to be out of one's aim, to be disconnected.

TRAMORE, in Geography, a small post-town of the county of Waterford, on a bay of the same name, where there is a very fine ilrand, from which it takes its appellation. It has a handforde market-houfe and assembly-room, and is much frequented for sea-bathing. It is 82 miles S.S.W. from Dublin, and about 6 S. from Waterford.

TRAMUTUL, a town of Naples, in Basilicata; 13 miles S.S.E. of Potenza.

TRANADUCA, in Ancient Geography, a town of Hifpamia, in Bactria, in the country of the Butili, between Mesalia and Barbebola. Ptolemy.

TRANCAULT, in Geography, a town of France, in the department of the Aube; 9 miles S. of Nogent fur Seine.

TRANCHE,
TRANCE, or Trenché, is used by the French armorists, to express that manner of partition called among us, party per bend dexter.

A cantil on is said to be trenched, cut, when it is divided in two diagonally, the division coming from the dexter angle of the chief to the sinister angle of the point. When it is divided contrariwise, it is said to be tailé, or party per bend sinister.

TRANCEFILARE, in the Manze, the cross chain of a bridge, that runs along the bit branch, from one branch to the other.

TRANCOSO, in Geography, a town of Portugal, in the province of Tra-os-Montes. In the beginning of the 12th century, Abacoan, a Moorish king of Badajoz, laid siege to this town, and persevered with great obstinacy, till the inhabitants were driven to the last extremity, but were relieved by King Alphonso Henriques, who defeated the Moors with great slaughter; 9 miles W. of Pinhel.

TRAME, a town of Sweden, in the province of Skone; 9 miles W. of Christianfladt.

TRANEKIAR, an ancient fortress of Denmark, in the island of Langeland.

TRANEMO, a town of Sweden, in the West Gothland; 46 miles E.S.E. of Gothenburg.

TRANENT, a market-town in the presbytery and thire of Haddington, Scotland, is situated on the eastern side of a narrow valley, 10 miles E. from Edinburgh, and 380 miles N. by W. from London. It was anciently called Tree-arnet and Travenent, signifying the habitation in the vale. The church is an ancient incommodeous fabric, of a very peculiar form. On the outside, it appears to consist of three separate oblong houses; but when entered, is found to be only one building. A square tower rises from the centre, supported by the side-walls of the middle building, and by crofs arches. Two weekly markets are well supplied with butcher's meat. The parih of Tranent extends about six miles in length, and three miles in breadth, and is divided by the great east road into two nearly equal parts. It comprizes the villages of Cockenzie, Port Seaton, Seaton, St. Clement's Wells, and Wetter Falside. The surface is level and well cultivated. The coast abounds with oyster-beds, but they are nearly exhausted by over-dredging. Coal is abundant, and is worked at three collieries to a great extent. At Cockenzie is a great manufactory of common salt; and at St. Clement's Wells is the most considerable distillery in Scotland. According to the population return of the year 1811, the inhabitants of this parish were 2036, occupying 640 houses. Here is a parochial school, with a salary to the master of 300 merks and perquisites; here are also seven other schools. After the reformation, the parish of Seaton was annexed to that of Tranent; but it was reduced in 1686, by making the baronies of Preston-Grange and Preston-Pans a new parish, under the name of Preston.

In 1695, the parish of Tranent was further diminished, by the north-east corner of it being annexed to the new parish of Glades-Muir. In 1493, a collegiate church was founded in the village of Seaton, by George, lord Seaton, which is still nearly entire. The most ancient edifice in the parish is that of St. Germans, now the seat of David Anderson, esq., where an hospital was founded previous to the year 1296. It was afterwards poffessed by the Knights Templars; and after its suppression, was granted in 1494, with most of its revenues, by king James IV., to the King's College of Aberdeen. The battle of Preston, in 1745, was fought partly in this parish.—Beauties of Scotland, vol. i. 1805.


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TRANFRANT, a town of Algiers, near the coast; 30 miles S.W. of Oran.

TRANG, a river of Lower Siam, which runs into the Indian sea, N. lat. 7°. E. long. 9° 33'.

TRANGANO, a town of Asia, in the kingdom of Jore, near the sea, on the side of a river, which has a shallow bar and several rocks scattered about. There are about 1000 houses; 110 miles N. of Pahang. N. lat. 5° 30'. E. long. 103° 5'.

TRANGOAR, a town of Hindooftan, in the county of Cullcut; 8 miles N.E. of Panniary.

TRANGLE, in Heraldry, the diminutive of a felle, commonly called a bar.

TRANI, in Geography, a city of Naples, and capital of the province of Bari; the see of an archbishop, and residence of the governor; 21 miles W. of Bari. N. lat. 41° 19'. E. long. 16° 28'.

TRANKEY, a name given in the island of Carrick, near the Perian shore, to a vessel about the size of a Peter-boat, sharp at both ends. It is built of very rough pieces of wood, rudely put together, and covered over with a thick coat of bitumen, with which the country abounds. These vessels sail with great speed with either end foremost, having no direction of head from stern. The island of Carrick is about twelve miles long and seven broad, and contains between 600 and 700 inhabitants. It abounds with goats, but has very few cows, and no beasts of prey; nor are there any fowls, tame or wild, except fowk and turtle doves. It produces few vegetables, but has wheat, rice, and barley, though not in sufficient quantity for the inhabitants, whose food is fish, with which they are plentifully supplied from the vicinity of the island. Here is also very fine turtle, but not eaten by the natives.

TRANQUEBAR, in Geography, a sea-port town of Hindooftan, in the country of Tanjore, situated on the coast of Coromandel, with a harbour, at the mouth of one of the branches of the Cauvery, defended by a fort, erected by the Danes in the year 1621, who had obtained a grant of the town, and a fertile territory, from the rajah of Tanjore, for an annual rent of about 7201. In the beginning of the present century, the prince of Tanjore attempted to seize on Tranquebar, and began a regular siege; but by the assistance of the English, he was compelled to give over the attempt, and make peace. The town is between two and three miles in circumference, and surrounded with a wall and several bastions, well provided with artillery; within the walls are three Christian churches, one of which is for Roman Catholics, descendants of Portuguese in possession of the town before the Danes; a large mosque for the Mahometans, and several pagodas for the Gentoos. The territory belonging to the town is considerable, and is full of populous villages; 56 miles S. of Pondicherry. N. lat. 11° 1'. E. long. 79° 54'.

TRANQUILLITY, a town of New Jersey; 8 miles S. of Newtown.

TRANQUILLO, a cape at the south end of the island of Rhodes. N. lat. 38° 2'. E. long. 27° 28'.

TRANS, a town of France, in the department of the Ille and Vilaine; 6 miles S.E. of Dole.

TRANSECO, a town of Naples, in Abruzzo Ultra; 8 miles S. of Celano.

TRANSACTION, Transaction, in the Civil Law, an accommodation of some business or dispute between two parties, by a mutual and voluntary agreement or contract between them.

Transactions, Philosophical, are a kind of journal of the
the principal things that come before the Royal Society of London. The Translations contain the several discoveries and histories of nature and art, made by the members of the Society, or communicated by them from their correspondents, with the several experiments, observations, &c. made by them, or transmitted to them, &c.

They were first set on foot in 1663, by Mr. Oldenburg, secretary of the Society, and were continued by him till the year 1674. Upon his death, they were discontinued till January 1678, when Dr. Grew resumed the publication of them, and continued it for the months of December 1678, and January and February 1679, after which they were intermittent till January 1683. During this last interval, they were suppled in some measure by Dr. Hook's Philosophical Collections. They were also interrupted for three years, from December 1687 to January 1691, besides other smaller interruptions amounting to near one year and a half more, before October 1693, since which time the Translations have been regularly carried on.

They were for many years published in numbers, and the printing of them was always, from time to time, the single acts of the respective secretaries, till the year 1732, when the Society thought fit that a committee should be appointed to reconsider the papers read before them, and to select out of them such as they should judge most proper for publication in the future Translations. The members of the council continue a standing committee for this purpose. They meet on the first Thursday of every month, and no less than seven members of the committee (of which number the president, or, in his absence, a vice-president, is always to be one) are allowed to be a quorum, capable of acting in relation to such papers. The question, with regard to the publication of any paper, is always decided by the majority of votes taken by ballot.

They are published annually in two parts, at the expense of the Society, and each fellow is entitled to receive one copy gratis, of every volume published after his admission into the Society.

The Philosophical Translations, to the end of the year 1700, were abridged in three volumes, by Mr. John Lowthorp; those from the year 1700 to 1720 were abridged in two volumes, by Mr. Henry Jones; those from 1719 to 1733 were abridged in two volumes, by Mr. John Eames and Mr. John Martyn. Mr. Martyn continued the abridgment of them from 1732 to 1744, in two volumes; and those from 1743 to 1752, in two volumes.

**Transcellsensis Mons.** In *Ancient Geography*, a mountain of Africa, near the municipality; called by Ammianus Marcellinus, Sugabiraritamus. This town was situated in Mauritania Ccesarea, south of the town of Zucchabari, and near the river Chnalam.

**Transcendent.** Or Transcendental, something raised or elevated beyond other things; or which passes or transcends the nature and circumstances of other inferior beings, so as not to be intimately and essentially included under them.

The term is particularly applied to the object of metaphysics, which considers beings in general, or transcendental beings, as God and angels, and truths consisting in pure speculation.

Logicians and metaphysicians give the name of transcendental to those which are so general, and of a signification so extensive and universal, that they pass through all the categories, and agree to all kinds of things. Such are the terms *re*, *vom*, *verum*, *bonum*, *etc.* See **Ens**, &c.

**Transcendental Art.** See **Art.**

**Transcendental Perfection.** See **Perfection.**

**Transcendental Quantities, among Schoolmen.** See **Quantity.**

**Transcendental Quantities, among Geometrical.** are indeterminate ones; or such as cannot be expressed or fixed to any constant equation. Such is a transcendental curve, or the like.

M. Leibnitz has a dissertation in the *Acta Erud.* Lii. in which he endeavours to shew the origin of such quantities; *viz.* why some problems are neither plain, solid, nor transfigured, nor of any certain degree, but do transcend all algebraical equations.

He also shews how it may be demonstrated without calculation, that an algebraic quadratrix for the circle or hyperbola is impossible: for if such a quadratrix could be found, it would follow, that, by means of it, any angle, ratio, or logarithm, might be divided in a given proportion of one right line to another, and this by one universal construction; and consequently the problem of the section of an angle, or the invention of any number of mean proportional, would be of a certain finite degree.

Whereas the different degrees of algebraical equations, and therefore the problems, understood in general of any number of parts of an angle, or mean proportions, is of an indefinite degree, and transcend all algebraical equations.

**Transcendental Curve.** In the Higher Geometry, is such a one as cannot be defined by any algebraical equation; or of which, when it is expressed by an equation, one of the terms is a variable quantity. See **Curve.**

These curves are the same with what Declarers, and, after his example, several others, call mechanical curves, and which they would have excluded out of geometry; but for Isaac Newton and M. Leibnitz are of another sentiment. For, in effect, in the construction of geometrical problems, one curve is not to be preferred to another, as it is defined by a more simple equation, but as it is more easily described than that other. See **Geometrical Line.**

And some of these transcendental or mechanical curves are found of greater use than all the algebraical ones together, except the circle.

Add, that M. Leibnitz, in the *Acta Erud.* Lii. gives us a kind of transcendental equations, by which these transcendental curves are actually defined, and which are of an indefinite degree; that is, are not always the same in all the points of the curve.

Whereas algebraists use to assume some general letters or numbers of the quantities sought, in these transcendental problems; M. Leibnitz assumes general or indefinite equations for the lines sought; +, +, putting x and y for the absciss and ordinates, the equation he uses for a line sought is

\[ a = b x + c y + d x y + e x + f y, \]

where c = 0. By the help of which indefinite equation, which in reality is finite, for it may always be determined how far farer it is necessary to raise it, he seeks the tangents; and comparing that which results, with the given properties of tangents, he finds the value of the assumed letters a, b, c, and thus defines the equations of the line sought.

If the comparison above mentioned do not proceed, he pronounces the line sought not to be an algebraical, but a transcendental one.

This supposed, he goes on to find the species of transcendence; for some transcendental depend on the general division or section of a ratio, or upon the logarithms, others upon the arcs of a circle, and others on more indefinite and compound inquiries.

Here, therefore, besides the symbols x and y, he assumes a third, as v, which denotes the transcendental quantity; and
and of these three forms a general equation of the line
found, from which he finds the tangent according to the
differential method, which succeeds even in transcendental
quantiies. What he finds he compares with the given prop-
erties of the tangent, and so discovers not only the value of
\(a, b, c, \text{ &c.} \) but also the particular nature of the trans-
cendental quantity.

And though it may sometimes happen that the several
transcendentals are so to be made use of, and thefe of dif-
terent natures, too, one from another; alfo, though there
be transcendentals, or transcendentalts, and a propagation
of these in infinitum; yet we may be fatisfied with the moft
eafy and useful one, and for the moft part may have re-
course to fome peculiar artifices for shortening the calculus,
and reducing the problem to as fimple terms as may be.

This method being applied to the funfines of quadratures,
or to the invention of quadratrices, in which the property
of the tangent is always given, it is manifest not only how
it may be discovered, whether the indefinite quadrature may
be algebraically impossible, but alfo how, when this impos-
fibility is discovered, a transcendental quadratrix may be
found; which is a thing which had not before been known.
So that it fems that geometry is by this method carried in-
finitely beyond the bounds to which Vieta and Descartes
brought it; hence, by this means, a certain and general
analysis is established, which extends to all the problems
which are of no certain degree, and confequently not com-
prehended within algebraical equations.

Again, in order to manage transcendental problems
(wherever the funfines of tangents or quadratures occurs)
by a calculus, there is hardly any that can be imagined
shorter, more advantageous or univerfal, than the differential
calculus, or analysis of indivifibles and infinites.

By this method we may explain the nature of trancen-
dental lines by an equation; e. g. Let \( a \) be the arc of
a circle, and \( x \) the vefted line; then will \( a = \frac{\int f \, dx}{\sqrt{2x - xx}} \):
and if the ordinate of the cycloid be \( y \), then will \( y = \sqrt{2x}
- xx + \frac{\int f \, dx}{\sqrt{2x - xx}} \), which equation perfectly ex-
prefes the relation between the ordinate \( y \) and the abscifs \( x \);
and from it all the properties of the cycloid may be demont-
rated.

Thus is the analytical calculus extended to thofe lines
which have hitherto been excluded, for no other caufe but
that they were thought incapable of it.

TRANSTATION, in Pharmacy, the fame with filtration, or percolation.

TRANSCRIPT, a copy of any original writing, par-
ticularly that of an act, or instrumcnt, inferted in the body
of another.

In this fenfe we fay, transcript of a fine, &c. See Fine
and Duplicate.

TRANSCRIPTIO recognitionis faepe coram judiciaribus
existenatis, &c. in Law, is a writ for certifying a re-
gnizance into chancery, taken before the justice in eyre.

TRANSCRIPTUS pedis finis levati intentandi in cancellarium, is
a writ for certifying the foot of a line leved before juflices
in eyre, &c. into chancery.

TRANSEAT, in the Schools, &c. a term purely Latin,
figurifying, let it pafe, or fuppofe a proportion to be true,
without granting it.

Hence the proverb, tranfeat, Gracum est, non legitur: the
phrase is faid to have taken its rife from fome ancient com-
mentators, or glosfographers of the civil law, who, not
understanding Greek, pafted over all the words that oc-
curred in that language, without explaining them.

In the Roman chancery, a nil tranfeat is a kind of oppo-
mation made to the felling of a bull, or to the delivery of
fome other instrument, till the parties, againft whom it is
directed, have been heard againft it.

TRANSEMENTATION, a change of the ele-
ments or principles of one body into thofe of another.
Such is that which Roman Catholics contend for in the
eucharif, where the elements of bread and wine, they fay,
are changed into thofe of flefh and blood. See Trans-
substantiation.

TRANSEMENTATION, wherever it happens, is always allowed
miraculous, or an effect beyond the ordinary powers of
nature.

TRANSEPT, the crofs aisle, extending from north to
south across the nave and main ailes of our ancient churches.
In foine churches, as in the cathedral of Salifiury, there is
a double tranfept, which makes it refeemble an archiepisco-
pal crofs in its ichnography.

TRANSFER, in Commerce, &c. an act by which a
perfon surrenders his right, interefl, or property, in any
thing moveable or immoveable, to another.

The fafe or donation of an inheritance, &c. transfers the
property, rights, &c. of it.

The term is principally used, in the commerce of flocks,
for the affigning and making over of fubfcriptions or shares
therein to fuch as purcafe them of the proprietors. In the
South Sea Company, the Bank, East India, &c. transfers
are made by entering the flock under the name of the pur-
cafer under his proper letter of the alphabet.

A counterfeit, in this cafe, is by act of parliament made
a capital crime.

TRANSFIGURATION, among Diviners, that mira-
culous change wrought by Jefus Chrift, in prefence of St.
Peter, St. James, and St. John, on mount Thabor,
where he appeared in his glory, in company with Mofes
and Elias. See the defcription of it in St. Matthew,
chap. xvii.

The term is also applied to a fect held in the Romifh
church on the 6th of August, in commemoration of that
miracle.

TRANSFORMATION, a metamorphofis, or change
of form.

The chemifs have been a long time feeking the trans-
formation of metals, that is, their tranformation, or the
manner of changing them into gold.

Among the myafics, by transformation is understood
a change of the contemplative fou\( \text{f, by which it is in some
meafure defignified, or converted into the
fubftance of God, and in which it is, as it were, lost and
swallowed up in the divinity, fo as not to perceive its own
diffinition from God.

The word transformation is very liable to be abused;
but many of the myafics ufe it innocently enough; meaning
no other by it than what St. Paul did, \( \text{Vivo ego, jam non
ego, vivit vero in me Chriftus}. \)

Transformation is also fometimes used for what we
more properly call transubfiantiation.

TRANSFORMATION of Equations, in Algebra, is a method
of changing equations into others of a different form,
but of equal value. This operation is neceffary in order
to prepare equations for a more easy folution. We fafl-fub-
join fome examples of the moft common and ufeful kind
under this head. The affirmative roots of an equation are
changed into negative roots of the fame value, and \( vise
versa \), by only changing the figns of the terms alternately,
beginning with the second.
Thus, the roots of the equation $x^3 - x^3 - 19x^2 + 49x - 30 = 0$, are $-1, +2, +3, -5$; whereas the roots of the same equation having only the signs of the second and fourth terms changed, viz. $x^3 + x^3 - 19x^2 - 49x - 30 = 0$, are $-1, -2, -3, +5$.

If it be required to transform an equation into another that shall have its roots greater or less than the roots of the proposed equation by some given difference, the method is as follows. Let the proposed equation be the cubic $x^3 - p x^2 + q x - r = 0$; and let it be required to transform it into another, whose roots shall be less than the roots of this equation by some given difference ($e$), i.e., suppose $y = x - e$, and consequently $x = y + e$; then, instead of $x$ and its powers, substitute $y + e$ and its powers, there will arise this new equation.

$$(A) y^3 + 3ey^2 + 3e^2y + e^3$$

$${-py^2} - 2pey - pe^2$$

$$+ qy + qe$$

$$= 0;$$

whose roots are less than the roots of the preceding equation by the difference ($e$).

To find an equation whose roots shall be greater than those of the proposed equation by the quantity ($e$), suppose $y = x + e$, and $x = y - e$, and the equation will have this form.

$$(B) y^3 - 3ey^2 + 3e^2y - e^3$$

$$-py^2 + 2pey - pe^2$$

$$+ qy - qe$$

$$= 0.$$  

If the proposed equation be in this form, $x^3 + px^2 + qx + r = 0$, then by supposing $x + e = y$, there will arise an equation agreeing in all respects with the equation (A), but that the second and fourth terms will have contrary signs.

$$(C) y^3 - 3ey^2 + 3e^2y - e^3$$

$$+ py^2 - 2pey + pe^2$$

$$+ qy - qe$$

$$= 0.$$  

By supposing $x - e = y$, there will arise an equation agreeing with (B) in all respects, but that the second and fourth terms will have contrary signs to what they have in (B) as

$$(D) y^3 + 3ey^2 + 3e^2y + e^3$$

$$+ py^2 + 2pey + pe^2$$

$$+ qy + qe$$

$$= 0.$$  

Hence we see how the second or other intermediate term may be taken away out of an equation; for, in the equation (A), whose second term is $3e - p \times y^2$, if we suppose $e = \frac{1}{3}p$, and consequently $3e - e = 0$, the second term will vanish. In the equation (C), whose second term is $-3e + p \times y^2$, supposing $e = \frac{1}{3}p$, the second term also vanishes. But the equation (A) was deduced from $x^3 - px^2 + qx + r = 0$, by supposing $y = x - e$; and the equation (C) was deduced from $x^3 + px^2 + qx + r = 0$, by supposing $y = x + e$; whence may be deduced the following rule for exterminating the second term out of any cubic equation; viz. add to the unknown quantity of the given equation the third part of the coefficient of the second term with its proper signs, viz. $\pm \frac{1}{3}p$, and suppose this aggregate equal to a new unknown quantity $y$. From this value of $y$ find a value of $x$ by transposition, and substitute the value of $x$ and its powers in the given equation, and there will arise a new equation wanting the second term. E.g. Let the equation be $x^3 - 9x^2 + 26x - 34 = 0$; suppose $x - 3 = y$, or $y + 3 = x$, and substituting according to the rule, we shall have,

$$y^3 + 9y^2 + 27y + 27$$

$$- 9y^2 - 54y - 81$$

$$+ 26y + 78$$

$$= 0.$$  

$y^3 - y - 10 = 0 = 0$, an equation wanting the second term.

If the equation proposed be of any number of dimensions ($n$), and the co-efficient of the second term with its sign prefixed be $-p$, then supposing $x - \frac{p}{n} = y$, and $x = y + \frac{p}{n}$, and substituting this value for $x$ in the given equation, there will arise a new equation that shall want the second term; whence the second term may be exterminated out of any given equation by the following rule. Divide the co-efficient of the second term of the proposed equation by the number of dimensions of the equation; and assuming a new unknown quantity $y$, add to it the quotient having its sign changed; then suppose this aggregate equal to $x$, the unknown quantity in the proposed equation; and for $x$ and its powers, substitute the aggregate and its powers, and the new equation will want its second term.

Let the proposed equation be a quadratic, as $x^2 - px + q = 0$, then suppose $u + \frac{p}{2} = y$, and $x = y - \frac{p}{2}$, and substituting this value for $x$, we shall have,

$$y^2 - \frac{p}{2}y + \frac{p^2}{4}$$

$$- py - \frac{p^2}{4}$$

$$+ q.$$  

Having found the value of $y$, that of $x$ may be had by means of $y + \frac{p}{2} = x$; e.g., since $y^2 - q - \frac{p^2}{4} = 0$, $y^2 = \frac{p^2}{4} - q$, and $y = \pm \sqrt{\frac{p^2}{4} - q}$, and therefore $x = y + \frac{p}{2} = \frac{p}{2} + \sqrt{\frac{p^2}{4} - q}$.

If the proposed equation is a biquadratic, as $x^4 - px^3 + qx^2 - rx + s = 0$, then by supposing $x - \frac{1}{2}p = y$, or $x = y + \frac{1}{2}p$, an equation shall arise having no second term. And if the proposed equation is of five dimensions, we must suppose $x = y + \frac{1}{3}p$, &c. It is plain, that in a quadratic equation wanting the second term, there must be one root affirmative and one negative, and these must be equal to one another. In a cubic equation wanting the second term, there must be either two affirmative roots equal, taken together, to a third root which must be positive.

Let an equation $x^2 - px + q x - r = 0$ be proposed, and let it be required to exterminate the third term. By supposing $y = x - e$, the co-efficient of the third term in the equation of $y$ is found (see equation A supra) to be $3e - 2pe + q$. Suppose that co-efficient equal to nothing, and by resolvable the quadratic equation $3e - 2pe + q = 0$, you will find the value of $e$, which substituted for it in the equation $y = x - e$, will shew how to transform the proposed equation into one that shall want the third term.

The quadratic $3e - 2pe + q = 0$, gives $e = p \pm \sqrt{p^2 - 3q}$; so that the proposed cubic will be transformed into an equation
equation wanting the third term, by supposing \( y = x - \frac{\sqrt{p^3 - 3q}}{3} \), or \( y = x - \frac{\sqrt{p^3} - 3q}{3} \).

If the proposed equation is of \( n \) dimensions, the value of \( y \), by which the third term may be taken away, is had by resolving the quadratic equation 
\[
\frac{2b}{n(n-1)} = c, \text{ supposing } p \text{ and } q \text{ to be the co-efficients of the second and third terms of the proposed equation.}
\]
The fourth term of any equation may be taken away by solving a cubic equation, which is the co-efficient of the fourth term in the equation when transformed. The fifth term may be taken away by solving a biquadratic, &c.

There are other transformations of equations that on some occasions are useful. An equation, as \( x^3 - px^2 + qx - r = c \), may be transformed into another that shall have its roots equal to the roots of this equation multiplied by a given quantity, as \( f \), by supposing \( y = fx \), and \( x = \frac{y}{f} \); and substituting this value for \( x \) in the proposed equation, there will arise 
\[
\frac{y^3}{f^3} - \frac{p y^2}{f^2} + \frac{q y}{f} - r = c,
\]
and multiplying all by \( f^3 \), \( y^3 - px^2 + qx - r = f^3 c \), where the co-efficient of the second term of the second proposed equation, multiplied into \( f \), makes the co-efficient of the second term of the transformed equation; and the following co-efficients are produced by the following co-efficients of the proposed equation (as \( a, p, r, &c. \)) multiplied into \( f \) (\( f^3, f^2, f, &c. \)). Therefore, to transform any equation into another whose roots shall be equal to the roots of the proposed equation multiplied by a given quantity \( f \), you need only multiply the terms of the proposed equation, beginning at the second term, by \( f, f^2, f^3, &c. \) and putting \( y \) instead of \( x \), there will arise an equation having its roots equal to the roots of the proposed equation multiplied by \( f \) as required. Let it be required to transform an equation, the highest term of which has a co-efficient different from unity, into one that shall have the co-efficient of the highest term unit. If the equation proposed is \( ax^3 - px^2 + qx - r = c \), then transform it into one whose roots are equal to the roots of the proposed equation, multiplied by \( a \): 
\[
i. e. \text{ supposing } y = ax, \text{ or } x = \frac{y}{a}, \text{ and there will arise } \frac{y^3}{a^3} - \frac{p y^2}{a^2} + \frac{q y}{a} - r = c; \text{ so that } y^3 - px^2 + qx - r a^2 = c; \text{ whence we deduce the following rule; change the unknown quantity } x \text{ into another } y, \text{ prefix no co-efficient to the highest term, pass the second, multiply the following terms, beginning with the third, by } a, a^2, a^3, &c. \text{ the powers of the co-efficient of the highest term of the proposed equation, respectively. Thus, the equation } 3x^3 - 13x^2 + 14x + 16 = c, \text{ is transformed into the equation } y^3 - 13y^2 + 14y + 16 = c, \text{ or } y^3 - 13y^2 + 42x^2 + 144 = c. \text{ Then finding the roots of this equation, it will easily be discovered what are the roots of the proposed equation; since } 3x = y, \text{ or } x = \frac{y}{3}; \text{ and therefore, since one of the values of } y \text{ is } 2, \text{ it follows that one of the values of } x \text{ is } \frac{2}{3}. \text{ By this rule an equation is easily cleared of fractions.}

Suppose the equation proposed is \( \frac{p}{m} x^3 + \frac{q}{m} x - r = c \). Multiply all the terms by the product of the denominator, you find \( mn s x^3 - np x^2 + mbe x - mn r = 0 \). Then transforming the equation into one that shall have unit for the co-efficient of the highest term, you find \( y - n e p x^2 + m^2 n q x - y - m^2 n r = c \). Or, neglecting the denominator of the last term \( c \), you need only multiply all the equation by \( mn, \) which will give 
\[
m s x^3 - np x^2 + m q x - \frac{m n r}{c} = 0, \text{ and then, } y^3
\]
\[
- np x^2 + m^2 n q x - y - \frac{m^2 n r}{c} = 0.
\]
After the values of \( y \) are found, it will be easy to discover the values of \( x \); since, in the first case, \( x = \frac{y}{m n e} \); in the second, \( x = \frac{y}{m n} \).

Sometimes, by these transformations, surds are taken away. E. g. The equation \( x^3 - \frac{x}{2} - \frac{146}{27} = 0 \) is first reduced to this form \( 3x^3 - 4x - \frac{146}{9} = 0 \), and then transformed into \( y^3 - 12y - 146 = 0 \).

An equation, as \( x^3 - px^2 + qx - r = c \), may be transformed into one whose roots shall be the quantities reciprocals of \( x \), by supposing \( y = \frac{1}{x} \), and \( y = \frac{a}{x} \), or by one supposition \( x = \frac{r}{a} \), becomes \( x^3 - q x^2 + p r z - r = c \). By this transformation, the greatest root in the one is transformed into the least root in the other: for since \( x = \frac{1}{y} \), and \( y = \frac{1}{x} \), it is plain that when the value of \( x \) is greatest, the value of \( y \) is least, and conversely. See on this subject Maclaurin's Algebra part ii. chap. iii. iv. Saunderson's Algebra vol. ii. p. 687, &c. See Reduction of Equations.

TRANSFFUGA, in Antiquity, a defector. Among the Romans, defectors were commonly punished by cutting off their hands, it being thought that living in such a miserable truncated condition would strike more terror than death itself. We find, however, that defectors were likewise crucified, burnt alive, thrown from the Tarpeian rock, or exposed to wild beasts at public shows.

TRANSFUSION, TRANSFUSIO, compounded of the preposition trans, beyond, farther, and fundo, pour, the act of pouring a liquor out of one vessel into another.

In the preparations of chemistry and pharmacy there are frequent transfusions of liquors, syrups, &c.
Transfusion of the Blood, in Physiology, the transfer of the blood of one animal into the vascular system of another, by means of a tube connected with a vein of the receiving animal, and an artery of the other. A vein is first opened, to allow the efflux of the animal's own blood, and thus to make room for the fresh supply. This preliminary evacuation produces syncope; the animal ceases to move, and appears dead; but when the end of the tube connected with the artery of the other animal is introduced into the vein, and the stop-cock is turned, the current of arterial blood produces reanimation; the power of motion and the former strength are restored.

The experiments on this subject were first tried in England, where T. Clarke failed in his attempts in the year 1657; Phil. Trans. N° 35. Lower succeeded in 1665, and communicated his success to the Royal Society; Phil. Trans. N° 30. This was on dogs: Th. Coxe did it on pigeons; Birch, vol. ii. p. 50. Coxe and King exhibited the experiment on dogs before the Society, transfusing the blood from vein to vein; ibid. p. 123; Phil. Trans. N° 19, 20. 25. 27. It was again performed from a sheep to a dog; Birch, p. 153; and the experiment was afterwards frequently repeated; Birch, vol. ii. pp. 162. 179. 190. 191. It was also performed in France and other countries.

The first proceedings in this matter seem to have been intrigued merely by curiosity, or at least by a disposition to inquire into the powers of the animal economy. But higher views soon opened themselves: it was conceived that invertebrate diseasés, such as epilepsy, gout, and others, supposing to revive in the blood, might be expelled with that fluid, while, with the blood of a sheep or calf, the health and strength of the animal might be transferred to the patient. The most singular anticipations were indulged on the occasion, and the new process was almost expected to realize the alchemical reveries of an elixir of life and immortality. The experiment was first tried in France, where the blood of a sheep was transfused into the veins of a stupid youth, with the effect, as was asserted, of sharpening his wits. (Phil. Trans. 27. 32.) And a similar experiment was made without injury in a healthy man. (Ibid.) Lower and King transfused blood from a sheep into the siftem of a literary man, who had offered himself for the experiment, at first without inconvenience, but afterwards with a less favourable result; the Royal Society still recommending perseverence in the trials. Birch, vol. ii. pp. 216. 225. 227. 312. Phil. Trans. N° 30.

These events were not calculated to keep up the expectations that had been raised, of brilliant results; and other occurrences produced full more severe disappointment. The French youth first mentioned died languishing soon after the second transfusion: the physicians incurred great disgrace, and were judiciously prosecuted by the relations. (Phil. Trans. 28. 32. 56. 37. 54.) Not however discouraged by this unlucky case, they soon after transfused the blood of a calf into a youth related to the royal family, who died soon after with the intestines inflamed. (Phil. Trans. 28. 30.) The parliament of Paris now interfered, and proscribed the practice. (Du Hamel, Hist. Acad. Reg. Societ. p. 21, 22.) Two persons having died after transfusion at Rome, the pope also issued a prohibitory edict. (Eph. Nat. Cur. Dec. I., ann. 1, ofb. 149. Mercelin de Transfus. San- guinum, p. 253. 83.) From this time the practice has not been repeated in the human subject; although it has been repeatedly done, as a matter of philosophical curiosity, on animals who have suffered no interruption of their health and strength. Haller, Elementa Physeologiae, lib. iii. sect. 3. § 15—29.

Transgression, Transgression, compounded of trans, beyond, and gradire, to go, an offence against some law, or a breach or violation of it. The term is chiefly used in respect of the laws of God. In the doctrine of original sin, all mankind are supposed to share with Adam in the guilt of his first transgression. See Original Sin. Mofes threatens the transgressors of his law with a variety of temporal punishments.

Transgression, in our Law, a writ, usually called a writ, or action of trespass.

Of this Fitzherbert has two sorts; one vicountial, thus called because directed to the sheriff, and not returnable, but to be determined in the country. Its form differs from that of the other, as wanting the words quare et et armis, &c. See Vicountiel.

The other is termed a writ of trespass, and to be filed in the common pleas and king's bench. See Trespass.

Transitory Action. See Action.

Transitory Air. See Air.

Transitory, in lat. 14 Car. II. c. 11. is used for a custom-house warrant, or let pa.s; from the verb transire, I pass forth.

Transit, Transitus, from transire, to pass over, formed of trans and oe, I go beyond, in Astronomy, signifies the passage of any heavenly body over the meridian, or of one body over another having the same apparent declination. When the smaller body is behind the larger, it is said to suffer an occultation; but when it passes before, it is said to transit the other. Thus a star behind the moon suffers an occultation, but a planet passing over the sun's disc is said to transit him.

Mercury and Venus, &c, in their transits over the sun, appear like dark specks. See Meridian and Parallax.

Transit-Instrument, or Transit-Telescope, is an astronomical instrument, by which the transit or meridian passages of the heavenly bodies are taken. Before telescopic sights were introduced into the practice of astronomy, the instruments for finding a meridian line, and for observing meridian passages, were very different from what they are at the present day. So early as about the year 1570, Sir Christopher Wren, Mr. Gray, and Dr. Derham (see Phil. Trans.) had con- trived instruments for this purpose; the last and best of which we shall briefly notice, by way of contrast with the modern transit-instrument, to shew the improvements that have taken place within the last century. In fig. 11. Plate XXXII. of Astronomical Instruments, A B is a horizontal bar of hard wood or metal, turning stifly on the central stem of a tripod, and carrying two upright bars, C D and E F, which are bent a little near the lower extremity, and turned to a right angle at top; where there is a horizontal joint, as seen in the figure. From each of these upright bars is fastened a plumb-line, so as to come close to the ends of the horizontal bar A B respectively. At the ends A and B are two vases, or light-holes, from the former of which the sun, or may be seen through a smoked glass, and from the latter the pole-star, P, with the plumb-line interposed. The portions of the horizontal bar A C and B E are moveable round the joints at C and E, and the plumb-lines are long enough to be tangent to the angles of elevation required to the radius A B, which therefore will be proportional in any given latitude, whatever the dimensions may be. The use of this meridian instrument may be thus explained: when P is the pole-star, the whole instrument must be turned round till the eye at A sees the pole-star very
very nearly in contact with the suspended line; and the con-
tact or biflection may then more conveniently be effected by
turning the vane a little round the joint E: in this situation,
if the bar be at the moment on the true meridian by cal-
culation, the direction of light will be in the meridian line,
and bodies falling to the north, may be seen falling the
plumb-line BF at any altitude below the pole. Suspend
now the plumb-line AD from D, and turn the horizontal
part on its joint, till this line biflects the vane at A, and
move the vane at B gently round its joint E, till it is also
interfected by the other plumb-line DA, and the two lines
will be both suspended in the meridian line; consequently,
and eye looking through the vane at B, will see any body to
the fourth transit the line DA, provided it be below the
ecliptic.

The condition to be attended to in the construction of
a modern transit-instrument is, that while the telescope,
through which the object is viewed, undergoes a change of
elevation, its line of collimation shall move exactly in the
plane of the meridian circle of the place of observation,
after it has been once adjusted accurately into a line that
lies truly parallel with the north and south line. To effect
this purpose, it was found necessary that the axis of motion
should lie exactly horizontal, in the direction of a line that
joins the east and west points; that it should not bend by
the superincumbent weight in any position whatever; and
that the line of collimation should always cut the line of
the axis at right angles, without the least perceptible devia-
tion; for it is only while these conditions are fulfilled, that
the line of collimation will ascend from the horizon in a
true vertical line, during an increase of altitude; and that
this vertical line will continue also in the meridian. The
first perfon, we believe, who used an astronomical instrument
polishing the essential properties which we have described,
was Dr. Halley at Greenwich Observatory, soon after the
year 1719, which was the year in which he succeeded Flam-
stead as astronomer-royal. According to Dr. Smith, the
tube of Halley's telescope was five feet and a half long,
and its axis of motion about an el: it had also cross-hairs
with the requisite adjustments in the piece-eye, with Y sup-
ports for the pivots of the axis, likewise adjustable, and
the axis was levell'd by a spirit-level, so that but little room
remained for subsequent improvement, except in what re-
lates to the achromatic object-glasses, and the method of illu-
minating the hairs, and of limiting the quantity of light
necessary for particular observations. In the older instru-
ments, the reflected light of a lamp or candle was received
at the aperture of the telescope, as shown in fig. 15.
Plate XXIX. of Astronomical Instruments; but this mode
of illuminating the hairs was found inconvenient, on account
of the change of elevation of the telescope in successive
observations, which required as many new adjustments of the
lamp; and it was not till about the year 1787, that Dr.
Uffler of Dublin contrived the new method of transmitting
light through one end of the horizontal axis to a diagonal
perforated reflector, in the body of the tube, which brings
it to the hairs after reflection, whatever the altitude
may be to which the telescope is pointed. In our descrip-
tion of the different transit-instruments, it will not be nec-
ffary to repeat what we have already said of the theory
and construction of either object-glasses or eye-pieces, under our
article Telescope, to which therefore our readers are re-
ferred on these essential points.

Transit-instruments, as they are now constructed, may be
considered either as stationery or portable; the form of which was the original construction, and con-
tinues to be used in fixed observatories, for the purpose of
determining, in conjunction with a good astronomical clock,
the right ascensions of the heavenly bodies; but the latter
may be used in any place, for ascertaining the rate of a
clock or chronometer, and when nicely brought into the
meridian, for determining also the right ascensions with con-
fiderable accuracy.

Fig. 1. Plate XXXII. of Astronomical Instruments, repres-
ents a transit-instrument of the most approved stationery
construction, which may be made of any dimensions that
the aperture and focal length of the object-glasses will allow;
but is usually made with a tube of from 30 to 120 inches
long, and of proportional thicknesses, according to the degree
of accuracy that is required. A and B are either a pair of
solid plates firmly fixed in the ground, or a pair of pillars of
firm masonry, sufficiently high to allow the eye of the ob-
server to reach the eye-piece when the angle of elevation is
about 45°. Fig. 2. exhibits a lateral view of the same,
except that only one of the pillars is seen, in the direction of its
breadth; while fig. 3. is an enlarged representation of the
eye-end of the telescope; and figs. 4. and 5. are appendages
attached to the superior end of the pillars, all which we
shall describe in due succession. The tube of the telescope
ab is usuall'y of bras, of which the eye-end is at a, and the
object-end at b: in the instrument before us it is five feet
long; c and d, which appear to be two cones, are united to
the central part of the tube, and form the axis of motion
about three feet long: they are of bras also, and hollow,
but are rendered very strong by circular pieces of metal,
different diameters, that are forced into the hollow space one
after another at equal intervals: so that this axis has all the
strength without the weight of solid metal. The pivots at
the extreme ends of the axis are of bell-metal, and turned in
the lathe to precisely the same dimensions, so that they may
at any time have their positions reversed without affecting
the horizontal line. The pieces, shown by figs. 4 and 5, are
made fast to the upper extremities of the pillars, and receive
the pivots of the axis, each having an angular notch, called a
Y, which are adjusable by proper screws, one in a vertical,
and the other in a horizontal direction. The situation of
each of these screws is seen by the handle inferred on the
axis of the screw to which it belongs; and the manner
in which the moving parts are made to slide by the action
of the screws, between the parallel checks of the small frames,
requires no particular description. When the weight of the
telecope and of its axis is considerable, some part of this
weight is supported by a loaded lever, as seen in
fig. 1, which, by acting on the ponderous matter at some distance
from the pivots, relieves them from a portion of the stress
that would otherwise be laid on them by the whole weight.
Hence the pivots have their friction diminished; and conse-
quentlv their dimensions, as well as those of the Ys, remain
unaltered. When the weight is small, such appendage may
be dispensed with, provided the Ys and pivots be rectified
occasionally, when they are a little altered by attrition.
At a small distance from one end of the axis a graduated
circle is made fall, which moving with the axis, shows the
degree and minute of elevation, that the telescope has in any
position, on two opposite adjustable verniers, which carry a
spirit-level, and are clamped in a horizontal position, as seen
in fig. 2. The extreme end of the axis, which is remote
from the graduated circle, has a lens screwed into it, through
which the light of a lamp is made to pass in its way to the
diagonal reflector, contained between the two conical por-
tions of the axis, within the tube; and by the light thus
transmitted and reflected, the spider's lines, substituted for
hairs or wires, are illuminated; without which illumination
they would be invisible by night, except when the Moon or
Venus
VENUS is observed. The spirit-level, which hangs on two
vertical rods over the axis, is capable of being reversed in
position, and is used, in the first place, for placing the axis
of the telescope perfectly horizontal, and in the next, for
watching the permanence of such position by the situation
of its bubble. As the ends of the brass tube that contains
the level revolve on two opposite pins, projecting from the
rods of suspension respectively, the bubble will always oc-
cupy the upper part of the glass tube every state of the
telescope’s elevation; but in the reversed position of the
axis \( \varepsilon \), the level will be underneath it, though the bubble
will retain its place. The inside of the tube is ground to such
a long radius, that single seconds of deviation from a true
horizontal position may be read on an ivory scale by the
end of the bubble. When, however, the telescope is large,
and the axis consequently bulky, a spirit-level cannot be so
well applied, as with telescopes of ordinary size; and when
this is the case, a bason of pure mercury may be substituted
with great advantage: for when the pole-star is on the mer-
idian, and shines brightly, its reflected image, and also the
star itself, will both pass together over the central vertical
axis of the spider’s line, at corresponding degrees of elevation
and depression of the telescope, provided the axis be truly hori-
zontal, and as little time as possible be suffered to elapse
between the superior and inferior observations: but to render
this operation easy, stops may be clamped to the
graduated circle, to limit the space that is necessary to be
described by the object-end of the telescope. There is in
the instrument before us, moreover, a plumb-line apparatus
for levelling the axis, which is seen in fig. 2, and partially
on a larger scale in fig. 3. At \( a \) is a pin, from which a fine
silver wire may be suspended: and at \( e \) is a horizontal screw,
between two threads of which the wire rests, so as to be
able of adjustment in a latitudinal direction: the long narrow
tube, which lies parallel with the main tube of the tele-
scope, then receives the wire, and is put into a perpendicular
direction, so that the suspended plummet may be immersed
in a vessel of water; the microscope at \( j \) next the eye-piece,
now uppermost, views the image of a transparent dot, as a
point to which the wire is referred, and to cover which it is
brought by the screw \( e \); at the opposite end of the main tube,
are \( \delta \), is a similar microscope with a point of suspension
and adjusting screw; so that when the object-end of the tele-
scope is placed uppermost, the same adjustment is required
to bring the stretched wire over its luminous image; and when
this is done, the wire will bifurcate the lower luminous image
also, if the axis be perfectly level, but not otherwise. To
produce this coincidence, it will usually be necessary to ad-
just partly by the vertical screw of the proper \( Y \), and partly
by the screws of the plumb-line apparatus after each inver-
tion of the tube.

When the achromatic object-glasses does not produce a
round and well-defined point, as the image of a large star,
in any observation, it will be advantageous to diminish
the aperture till this appearance takes place, which will gen-
erally be the case when the central part of the object-glass
only transmits the light of such a star; but for small stars,
it will always be better to allow the whole aperture to be
open; not only because more light is thus admitted, but
also because the image of a small star is always a point free
from luminous irradiations, even in inferior achromatic tele-
scopes. Is the ten-feet telescope which Mr. Troughton has
 lately converted into a magnificent transit-instrument at
Greenwich (vis. in 1816), he has ingeniously contrived a
species of iris, that will contract or enlarge the effective part
of the aperture by the simple turning of a milled out, within
reach of the hand, while the eye is at its place for making
the observation; so that the proper quantity of light can
at any time be proportioned to what the nature of the ob-
ervation may require. There are fatal screws of adjust-
ment of the spider’s lines in the eye-piece both for horizontal
and vertical motion, and, in the best instruments, the eye-piece
itself has a sliding horizontal motion, which enables the ob-
server to keep the celestial body, though in motion, at the centre
of the field of view during the whole passage over the five
lines.

The best construction of a portable transit-instrument which
we have yet seen, is that represented by figs. 6 and 7, which
exhibit all the parts that are necessary for description,
and which was one of the numerous inventions which we have
had occasion to notice as the offspring of Troughton’s in-
genuity. The telescope of this instrument is 20 inches
long, and magnifies from 20 to 35 times, according to the
eye-pieces that are used; two of which are usually of the
prismatic or diagonal kind, to be used in high altitudes;
the aperture is 1.75 inch, and the power is competent to
see the pole-star by clear day-light. The construction of
the tube and axis is similar to that of the stationary instru-
ment, except that the graduated circle and double vernier,
with the level, lie beyond the \( Y \) of the support, and the iris
is wanting: otherwise it has all the adjustments for levelling
the axis, and bringing the line of collimation to a meridian
mark that the larger instrument possesses, as well as those
that rectify the position of the spider’s lines in the focus of
the negative eye-piece. The base of the stand is a thick
ring or rim of brass, that receives three equi-distant screws
for feet, besides the four screws that fix the two vertical
frames thereto, which constitute the supports of the axis;
one of which is seen entire in fig. 7. These supports are
kept perpendicular by the interior brassing-bars, of which
two are discoverable in fig. 6, attached by thumb-screws
at both ends to the ring and upright frames respectively.
The circular figure of the base is not only firm, but preserves
its shape in all degrees of temperature; and when the parts
are detached by loosening the thumb-screws, they will all pack
into a box that is of a convenient size for carriage. The
diameter of the circular base, and the consequent length
of the axis, is a foot within, and the height of the supports
thirteen inches. The graduated circle being of six inches dia-
meter, admits of readings by each of the two opposite verniers
to the accuracy of one minute, which is sufficient for finding
the meridian altitude of any celestial body, of which the de-
cision is known when the latitude is given; or for deter-
mining the latitude, when unknown, to the accuracy of one
minute. If the circle were made a little larger, and three
verniers substituted for two, a larger level might be used,
and the readings might be accurate to 20" or 25"; but as the
instrument was never meant to be used as an altitude-instru-
mament, the inventor considered only what dimensions are re-
quisite for constituting an useful transit-instrument in a port-
able form. The level of this instrument is entirely detached,
and equal in length to the axis itself; its shape is delineated
in the upper part of fig. 9, and the notches of its end-pieces
stand upon the pivots of the axis, so that the revolution of
the ends is performed without the least impediment. It is
however necessary to remove the level from the axis, when
the horizontal adjustment is finished, to avoid its being dis-
placed and broken by an alteration in the elevation of the
telecope. There are usually three studs of brass included
with the darkening-glasses, lantern, and other appendages;
two of which studs have conical holes, to receive the points
of the screws, or feet of the circular base: and for this pur-
pose, all the studs must be made fast to the slab or pillar
which supports the instrument, by plaster of Paris or putty
inferred into as many holes in the plate of the marble or
flour,
TRANSIT-INSTRUMENT.

None, care being taken that the line which joins the two conical points be in the direction of the meridian, or fo nearly so, that the adjufting screw of one of the Y's will bring it into that situation.

Mr. Thomas Jones, of Charing-Crofts, has made several 30 and 42-inch transit-instruments of the portable fort, supported by oblong frames of cast-iron, which look very neat, and

answer the purpose very well, a drawing of which construction we should have introduced into our plate, if it would have admitted of such addition. These instruments have all the properties of the instrument we last described, and have of course greater powers in their telescopes, and are also cheaper in proportion to their size. He has also made some of them with telescopes of only twenty inches, for the sake of greater portability.

Before any useful observation can be made with a transit-instrument of either the stationary or portable construction, it is necessary that all the adjustments be nicely made, and also that they be examined occasionally after a few observations are finished, in order to prevent errors which cannot be detected, or at least appreciated, at a subflece period. These adjustments are nearly the same for all the common transit-instruments, and may be explained under eight heads, as follow: viz.

1. To adjust the Spirit-Level.—When the level hangs on, or is made fast to the axis, put the telescope in its place, and see to which end of the level the bubble runs, which will always be the more elevated end; bring it back to the middle by the Y screw for vertical motion, or by the foot-screw under the end of the axis, if it be a portable instrument, and then invert the axis, end for end; then, if the bubble is again found in the middle, the level is already parallel to the axis; but if not, adjust one half of the error by the adjufting-screw of the level, and the other half by the Y screw, or foot of the support, as the case may be; and let the operation of reversing and adjusting by halves be repeated, until the bubble will remain stationary in either position of the axis, in which case the level will be right. When the detached level is used, that notch must be made a little deeper, by scraping with a penknife, which has the bubble refting over it, instead of wing an adjufting-screw, with which it is not usually provided; and when the notches that rest on the pivots are once made right, they will seldom require a second rectification. In the hanging level there are five-screws also, which adjust for parallelism of the level, as it regards a line joining the pivots of the telescope's axis; and this adjustment is known to be truly made, when the bubble does not run to one end, when the level is moved some degrees by a rotatory motion round its pivots, or central pins of suspension.

2. To place the Axis of the Telescope truly horizontal.—If the spirit-level is made use of, which is generally the cafe in instruments of ordinary dimensions, the fame operation which we have juft described will put the axis level, at the fame time that it puts the level parallel to the axis; for unless both these conditions are fulfilled, the adjuftment of the level will be deranged by reversion, and when this is not the case, it is a proof that both the level and the axis are truly horizontal. Hence, when the level is previously adjufted, it will be sufficient to bring the bubble to the middle of the level by the Y screw, or foot-screw alone, as the conftuction may require.

This adjuftment may also be made, in the larger instruments particularly, by means of a plumb-line, either applied to a frame, suspended by the pivots of the axis, that will reverse in position according to Ramfden's method; or hang-

ing on the tube of the telescope parallel to the line of collimation, as we have described Troughton's in figs. 2 and 3: in either cafe, a dot is bifected by the plumb-line near the point of suspension, and another near the lower end of the line, in both the reversed positions of the axis, when the adjuftment is truly made by the proper screws, as above directed.

But the moft accurate, as well as probably the moft convenient method of levelling the axis of a large instrument, is by reflection, by the aid of a bafon of pure quicksilver, as we have already intimated; and the pole-flar, being flow in its apparent motion, particularly at the time of its greatest elongation, is the moft proper object by which to make the adjuftment in question; for when the axis is level, and the flar is made to cover any one of the spiders' lines, its image reflected from the surface of the mercury will cover the same line, provided the depression of the telescope is effected instantaneously; and if this is not the cafe, the proper screws must be used for effecting this purpose without any reversion of the axis; for by this experiment, the line of flight of the telescope is proved to have a motion truly vertical, which is what the horizontal position of the axis is intended to produce.

Hence, if the exact coincidence of the places of the star and of its reflected image takes place in an instrument both before and after the reversion of its axis, this is a proof that both the pivots and Y's are respectively similar. This method of adjufting the axis of the large transit-instrument at Greenwich has been lately adopted, after a trial had been made by the astronomer-royal, of the application of a plumb-line, suspended in a detached flate from a point of considerable elevation.

3. To produce distinct Vision.—Before the subsequent adjustments can be made, it is necessary that the telescope should be put into a state of perfect vision; viz. that the object fixed upon should be seen well defined. This may be accomplished by sliding either the object-glafs or the eye-piece within the tube, till the desired effect is produced; but when wires, hairs, or lines of any kind are made fast in the common focus of these glafses, a motion given to the eye-piece will make those lines disappear, and a motion given to the object-glafs is in danger of deranging its best position; therefore, when a meridian mark is necessarily at so short a distance, that the same adjuftment of the eye-piece will not suit it that has been made for a celestial object, by which the parallel lines have been fixed in the focus, an auxiliary object-glafs, or glafs of long focus to be added to the proper object-glafs, is provided to remedy these inconveniences, whenever the meridian mark is the object viewed. The method of determining the focus of such additional glaftes, as shall shorten the compound focus of the object-glafs agreeably to what is requisite for a given distance, is explained under our article Telescope.

4. To put the Wires, Hairs, or Spider's Lines perpendicular to the Axis.—The parallel lines in the eye-piece of the telescope are usually attached to a circular piece of brass that turns tight within the interior end of the tube, and if, when the telescope changes its elevation, a point in the meridian, or other mark, travels along one of these lines, so as to be bifoected by it through the whole field of view, the said line will be perpendicular to the axis of motion; or if a long plumb-line be suspended at a distance, and a vertical line in the eye-piece is found to coincide with it while the telescope alters its angle of elevation, this will not only be a proof of the same thing, but will moreover, show that the axis is level; and when this is not the case, the piece holding the lines must be turned till they are found by trial to be truly vertical. The similarity of the intervals between the lines, and
also the angle measured by each, may be ascertained by a graduated staff, and the tables which we published under Telescope.

5. To make the Line of Collimation perpendicular to the Axis. — After having adjusted for distinct vision to some distant known object, make the middle line in the eye-piece biflect some well-defined point in it, and, having reversed the ends of the axis, observe if the same line again biflects the same point exactly; if it does, the line of collimation is right; but if not, the error may arise either from the situation of the point observed, or of the centre of the object-glass, as they respectively regard the vertical line in the eye-piece; that is, one or other of those lines may deviate a little from a true perpendicular to the line of the axis of motion, or both may be erroneous in their respective degrees; therefore, when revision has taken place, bring the vertical line one half way towards coincidence with the observed point, by the horizontal screw at the end of the axis, which alters the azimuth, and the other half by the side-screws of the eye-piece, which move the plate of the parallel lines, releasing one screw and tightening the other, so as to leave the said plate flat; then reverse again, and repeat the operation, till the same point is biflected in both positions of the axis.

6. To illumine the Wires, Hair, or Spider's Lines. — Before an observation of a star or planet can be taken, the parallel lines must be rendered visible to the eye of the observer, and the quantity of light to be admitted will depend on the magnitude of the body to be observed. A lantern containing a lamp must be fixed opposite that end of the axis which has its aperture closed by a lens, and so much of the light must be excluded as is superfluous for the observation; for when a small star is the object, much light will render it invisible, and yet it is necessary to have light enough to render the parallel lines visible; hence observations on very small stars require management of the quantity, and sometimes of the quality too of the extraneous light; on which account prisms of different coloured glass have been interposed between the lamp and the end of the axis, with sliding motions, to produce various modifications in the illumination, according to the exigencies of the moment.

7. To adjust the horizontal Wire or Hair for taking Altitudes. — When the altitude of an object is to be accurately taken, bring the bubble of the double vernier to the middle of the level, and turn the telescope on its axis of motion, till vernier 1 has its zero at 0 in the circle, or at 90°, if the circle is graduated for zenithal distances, as is mostly the case; then notice what distant point is cut by the horizontal wire; reverse then the axis, and biflect the same point again, and in this situation see what quantity is read by the same vernier; or, which will be still better, half the sum of the readings of both verniers; and may be read at both times, and the difference of the two average readings may be considerable; then one half of this difference, + or —, is the real error of each observation, accordingly as the axis is situated in position; and if this error is not obviated by a proper adjustment, it must be allowed for in the reading of every observation. But this error may be owing partly to the unadjusted state of the vernier level, and partly to the situation which the horizontal wire occupies in the eye-piece; therefore the screws which elevate and depress the horizontal wire, which, however, are not in all instruments, may correct one half of the error, and the screws of the vernier level the other, in each reversed position till the error disappears; i. e. till there is no difference perceived in altitudes of the same object taken in reversed positions of the axis of the telescope’s motion. But it is usual with astronomers, who take altitudes in reversed positions of a circle, to ascertain the error arising from want of true collimation in altitude, from a repetition of observations, and to apply it to each observation as a correction, rather than attempt an exact adjustment in this respect, when the error is incon siderable.

8. To make the Line of Collimation move in the Plane of the Meridian. — In order to fix a transit-instrument well in the meridian of any given place, it is necessary that the polar star be exposed to its view; as the polar point is situated in the centre of its diurnal circle, this circle must be biflected by the middle wire, or spider’s line, that passes through the zenith, before it will move in the plane of the true meridian. Formerly it was usual to place the instrument, by double altitudes of the sun, or by a knowledge of the solar time gained by observation of its altitude on a given day, nearly in the meridian of the place, and then to observe which of the two semicircles, to the right and left of the approximate meridian line, were passed through in the shorter time, by means of taking both the upper and lower transits of the pole-star successively; after which an allowance was made for the deviation from the meridian, and the observations were repeated till both semicircles were performed in the same time. But by this method of finding the centre of the circle surrounding the pole, the accuracy of the result depended on the rate of the clock that was used, during the whole time that the successive observations were employed; consequently some uncertainty remained as to the comparative times intervening between the successive transits, and the true polar point was, therefore, not easily ascertained: but this difficulty has recently been obviated by fixing on two stars nearly at opposite sides of the circle, so that their difference of right ascension may be very nearly 18°; for, when the two semicircles are alike, the time that elapses between the superior transit of one, and the inferior one of the other, will not be altered by a change of situation; the difference of the times will remain the same, whichever of the two stars makes the upper transit; but if the semicircles are unequal, the intervals of time will differ accordingly; so that if one star precede the other two minutes at its upper transit, and only one at its lower, half of this quantity will be the time corresponding to the deviation in position from the true meridian, which may be rectified by repeated observations of the short intervals, according to which the two stars follow one another, in transiting first above and then below the pole respectively; and all that the clock has to do, according to this method, is to count the seconds in each of those short intervals. When an instrument that is adjusted to have its line of collimation pass through the zenith by means of the horizontal position of its axis of motion, is thus made to biflect a polar circle, it will also pass through the pole, and will consequently move in the plane of the true meridian of the place. Various other methods of placing a common transit-instrument truly in the meridian have been recommended, but this is not only the easiest, but the best; and if the right ascensions of Dr. Maskelyne’s or Mr. Pond’s stars come right, when observed after the final verification, it may safely be concluded that the position of the instrument is in the true meridian.

When a transit-instrument is well constructed, and properly adjusted in all respects, it is one of the most useful instruments in astronomy; for without it the right ascensions of the heavenly bodies would not be accurately taken by direct observation, neither could the time, either solar or sidereal, be ascertained with that degree of precision which
TRANSIT-INSTRUMENT.

may be done by its aid. Indeed a perfect transit-instrument and a good sidereal clock are the indispensible furniture of every fixed observatory, and as companions, that mutually assist each other, they ought never to be separated.

We might now proceed to illustrate the use of the transit-instrument by real examples in practice, if we had not anticipated this part of our article under the heads ASCENSION and CHRONOMETER; in one or other of which articles we have explained both the method of determining the right ascension of any body, and also of ascertaining, without much calculation, the rate of a chronometer or astronomical clock. See the respective problems under CHRONOMETER.

The transit-instruments which we have above described are necessarily expensive, even in the portable form; and encouragement has been held out, by the Adelphi Society, for further improvements in the portable kind, so that they may become more common. And the frequent enquiries that have been made for a cheap portable instrument, induced Mr. H. C. Englefield, bart. to contrive a very simple one, which was first made by Mr. Thomas Jones, mathematical instrument-maker in London, and is now sold at his house at Charing-Cross. A description of this instrument, called a side transit-instrument, written by the contriver, is fold along with it, from which it appears, that it is not to be considered an original instrument, but an improvement on an old transit-instrument formerly belonging to Mr. Aubert, and purchased at his sale by the late Mr. W. Walker. We propose to copy the description nearly as it has been published, "It is well known," says the ingenious author, "that the transit-instrument, in its usual form, is liable to great injuries from blows, or other violence affecting the perpendicularity of the telescope to the axis; that it necessarily takes up much room in package; that, unless of a very small size, it is not easily fixed in a window or other opening in a common dwelling-house; and that it is quite impossible, except in fixed observations, to make it sweep the entire arc between the southern and northern points of the horizon. In windy weather its use is also very difficult and inconvenient. In the instrument now offered, all these inconveniences are avoided. It may be fixed almost anywhere; in many places it may be made to describe the entire semicircle of the meridian; the observer is put to no difficulties by change of place, as he always looks directly along the axis; it is packed in one-eighth of the space requisite to pack a common transit-instrument of the same real size; its weight is not more than a sixth of the other; from its simplicity it will be afforded at half the price; and its vernier and adjustments are easy and simple. It has also another advantage, that the mark by which it is placed in the meridian may be either in the meridian or at right angles to it; or, if convenient, two marks may be erected, one to the fourth or north, the other east or west; and if so fixed, it will be always seen, by inspection only, whether the mirror needs adjustment or not. In many confined situations, such as occur in cities, the power of having a mark at right angles to the meridian may be eminently useful. The general description of the instrument is as follows: The telescope is included in a brass cylinder, having a small cylinder at each end, turned true in the usual manner, and resting in Ys of the usual construction. These smaller cylinders are both pierced. In one is the eye-piece of the telescope, with its wires, &c. The other is open, for the purpose of seeing through it, if necessary, the eastern or western mark; and for adjusting by direct vision the line of collimation of the instrument. It also serves for the illumination of the wires. The object-glass of the telescope is placed to near this cylinder, as only to allow room for an unsilvered plane glass mirror to be placed before it at an angle of 45°. It is obvious, that as the telescope revolves on its axis in the Ys, every celestial object at right angles to it may successively be seen by reflection from the mirror; and of course, if the axis be placed due east and west, the transits of all celestial bodies over the meridian will be observed with the utmost accuracy and convenience. The aperture in the axis beyond the object-glass is not only of use for the adjustment of the instrument to an eastern or western mark, or for the illumination of the wires, but affords a means of seeing the mark at the same time with the body whole meridian passage is to be observed, and of thereby being certain of the true adjustments of the instrument at the very moment of observation; which is impossible in any other construction of the transit-instrument, and feems to be a very material advantage. I am convinced that transit-instruments of the largest size might, with very great advantage, be constructed on this principle. It is true, that where very much light is wanted, as in observations of stars in the day-time, the losses by reflection will be some disadvantage; but the losses of light from an unsilvered mirror is very small: and the convenient and simple form of the instrument; by its lightness less subject to flexure; by its position much less liable to errors from unequal change of temperature; and fo extremely commodious in its use; present advantages of a very important nature, and such as might introduce it into the most extensive observatories with profit. The advantages may perhaps be even greater than in small transit-instruments. When in the present construction the telescope is long, as its whole weight rests on the most disadvantageous part of the axis, this is of necessity made very large towards its centre, to avoid flexure; and the whole instrument is so heavy, that an additional apparatus of counterpoise must be added to the pivots, lest they should wear away the Ys, and the reverting the instrument becomes a work of some difficulty and danger: whereas in the construction propounded, the small comparative weight of the object-glasses and eye-glasses lies very near the pivots, and the middle of the tube is the lightest part of it. The operation of reverting is performed with great ease, both from the form and lightness of the instrument; and it may be added, that the comparative facility of observations is of greater advantage the larger the instrument. Having so far explained the general principles of this transit-telescope, which was executed very much to my satisfaction by Mr. Thomas Jones, it will be proper to describe more particularly its construction. The transit-stand is represented by either the upper or lower part of fig. 10.

The first is constructed for being placed or fixed on a vertical surface; the second for a horizontal one, A B; in both are the Ys, or supports for receiving the axis of the telescope. The end A, intended to be always next the eye, is furnished with both the horizontal and vertical adjustments, such as are usual to transit-instruments. The telescope's axis is represented by the lower part of fig. 9. The eye-end being at C, the object-end at D turns round in the Ys; A B upon its cyliners n, n: the screw-head r, at the object-end D, is for the purpose of adjusting the parallel glafs. The telescope is adjusted to distinct vision by means of the head or knob at P. The wires of the telescope are adjusted by means of the four capstan head-screws at the eye-end t t. The circle R is divided on the surface next to the eye. The eye-tube has a sliding motion for viewing the wires distinctly; the short piece of tube at the object-end turns round on the telescope's tube, and serves as a cover for the object-glafs. The upper part of fig. 9 is the riding level, and is placed upon the axis in the Ys, and ad-
justed by means of the screw S. Fig. 8. represents the stand, telescope, and level, displaying the position in which they are used; fig. 12, for placing the transit in the meridian. Of the verifications of this instrument, two are common to every construction; one only is peculiar to this. The line of collimation is adjusted by looking directly at some distant small point (the cover being turned over the lateral aperture), and turning the telescope gradually round on its axis, and moving the screw of the wires, if necessary, till the spot is in every position covered by the intersection of the wires. The axis is brought to a horizontal position, and the level is in the same mode adjusted by reversing the telescope or level, and correcting half the error by the level-screw, and half by the vertical screw of the Y, in the usual mode. The verification peculiar to this instrument is that of the mirror, and perhaps the best mode of doing this is by the pole-star, when nearly in an eastern or western position from the pole; its motion in azimuth is then so slow as to give ample time for the adjustment. Bring the pole-star to the vertical wire (the line of collimation having been previously adjusted); then reverse the telescope in its Y's; and if the star is still on the wire, the mirror is in adjustment: if not, correct half the difference by the mirror-screw, and half by the horizontal of the Y, till the error vanishes. This adjustment may also be performed, by setting up a board with two parallel perpendicular lines drawn on it, distant from each other exactly the space between the positions of the mirror when the telescope is reversed in its Y's. If the vertical wire be brought to cover one of the marks, and on being reversed, the wire covers the other mark, it is right: if not, the error must be made to vanish by correcting it half and half, as before directed, for the adjustment by the pole-star. The following method of placing the instrument correctly in the meridian, is equal if not superior to any that has yet been devised. Let Z (fig. 12,) be the zenith; P, the pole; H O, the horizon; Z P I, the meridian circle; Z K, a circle of altitude, distant from the meridian by a small quantity I K (suppose a degree); 1, 2, 3, 4, the diurnal circle of the pole-star, whose radius is 1° 45' nearly; and let the altitude of the pole be 51° 30'. Then when the pole-star is on the northern meridian, its altitude 3 I will be 49° 43', and its zenith distance Z 3 = 40° 15'; and A C D be a part of the diurnal arc of a star whose polar distance is 46° 30', and N. meridian altitude 50°. Now suppose the transit-instrument, whose axis is accurately levelled, and of course in the meridian at Z, to point at the horizon to K (it is obvious from its construction the telescope's axis will be at right angles to the meridian line) instead of I, the true meridian; then at 3 (the altitude of the pole-star under the pole) it will point at B, and the arc 3 B will be to I K, as the cosine of the altitude 3 I to radius; but 3 B, measured on the diurnal circle of the pole-star, will be the line of its distance from the meridian to the radius P 3 or P B: and, as in small arcs, the arc of a great circle, or of a small circle, or of their lines, are nearly coincident, we shall have very nearly, as Z 3 (the zenith distance) is to P 3 (the polar distance), so is the value of 3 B, in degrees of the pole-circle, to its value in degrees of a circle whose radius is Z 3. As and the radius Z 3 is to P 3 very nearly as 23 to I, the error of the transt telecope at the altitude 3 I, will be measured by a scale (if it may be so called) 23 times as great as itself. Now, let there be another star A, whose northern meridian altitude is as small as it conveniently can be, for example 3°, whose polar distance is, therefore, 46° 30', and whose right ascension is the same as that of the polar star; then, if the transit-telecope be in the meridian, both these stars will pass through it at the same time; but if it be out of the meridian by the quantity I K, the star A will pass through it when it comes to C, but the polar star not till it comes to B, when the star A has got to D, in its diurnal circle. The value of A C being therefore found, by multiplying I K by the cosine of its altitude A I, that value, being reduced to the angular value from the radius P A, will give the time of the star A passing through the transit telescope, after the time of its passing the meridian; and the fame operation being performed for the pole-star as before directed, the difference of these times will be the error in time of the transt, answering to the given deviation I K of the transit-telescope. And tables having been previously constructed for such stars as shall be thought convenient, the transit-telecope may, in a very short space of time, be let to the meridian, with a degree of precision unattainable by any other method. If the star A precedes the pole-star in its passage under the pole, no tables are requisite, nor any thing necessary to be known but the exact difference of the right ascension between the two stars; for having observed the transt of the star A, (the instrument being previously brought near the meridian, suppose half a degree,) then elevate the telescope to the pole-star, by moving the horizontal adjustment of the axis; keep the pole-star on the middle wire, till the due interval of time between their transit is elapsed; the instrument will then be extremely near its true position; and, by repeating the observation once more, will be brought to a perfect exactness. Or, if another star, following the pole-star in its passage, be observed on the fame evening, if the times elapsed between their transits are equal to the tabular difference or their right ascensions, which will probably be the case, the accuracy of the first placing the instrument will be immediately ascertained. Other stars near the pole may be made use of in the same manner as is here described for the pole-star, but with proportionately less advantage as the polar distance is increased. It is also obvious from the figure, that the transit of the pole-star above the pole may be also used, and that with nearly, though not quite, the same advantage as the transt below the pole. The same method may also be applied with equal ease, if the second star A pafs the southern meridian instead of the northern.

"The flaws of the pole-star's motion, though it renders its transit uncertain to a few seconds, cannot materially affect the accuracy of this method, as an error of ten seconds in time, in the elimation of its passage, which is certainly more than can be committed, would not cause an error of a third of a second of time in the passage of stars near the equator.

"Example of the computation with the numbers given above.

<table>
<thead>
<tr>
<th>Star</th>
<th>Pole-star</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sin. I K</td>
<td>8.241855</td>
</tr>
<tr>
<td>Sin. Z A</td>
<td>9.598844</td>
</tr>
<tr>
<td>Sin. Z 3</td>
<td>9.810316</td>
</tr>
<tr>
<td>Sin. P A</td>
<td>9.860562</td>
</tr>
<tr>
<td>Sin. A P C</td>
<td>8.379663</td>
</tr>
<tr>
<td></td>
<td>1° 22' 20&quot;</td>
</tr>
<tr>
<td>In time</td>
<td>5° 29'</td>
</tr>
</tbody>
</table>

"The error of a degree, therefore, in the position of the transit-telecope at the horizon, causes the star A to pass through it 5° 29' in time later than it ought; whereas the same error causes the transit of the pole-star to be 1° 26' 40" later than it ought; and the difference between the
these two times, viz. 1st 21st 114, will be the difference of the observed time of their transits, owing to the error of the position of the transit-telescope, their real right ascension being supposed the same." After having thus given Sir H. Englefield's own words, we shall only add on this subject, that on enquiry of Mr. Thomas Jones, we learn that several of these instruments have been made and fold, and one on an enlarged scale; but that stars smaller than those of the third magnitude cannot be seen by a telescope in which the reflection precedes the refraction.

Transit-Circle, is an astronomical instrument, by which, with the aid of an astronomical clock, both the right ascension and declination of a heavenly body are determined at the same time. This instrument is of modern date, and differs from a transit-instrument of the best construction, only as it has a graduated circle of larger dimensions than the latter, and, by means of microscopes, reads the angle observed to the accuracy of a single second; whoever, therefore, has a good transit-circle, and a superior astronomical clock, has an observatory for determining the exact place of any heavenly body. Under our article Circle, we have described the mural transit-circle by Troughton, which has been usefully employed by Mr. S. Groombridge at Blackheath, and which has proved itself to be an instrument of the first class; and we have flated a report, that a large one was in contemplation for Greenwich, which we said we might possibly have occasion to describe. That instrument has been finifhed by Troughton in his best manner, and though the plan of the construction is unique, and the mode of using it novel, its application to the purposes for which it was intended answers the most sanguine expectation of the maker, and in the hands of the present astronomer-royal, affords the means of making more accurate and at the same time more numerous observations in a given time, than ever were effected by any other instrument. Though this instrument has a long axis passing through a fold pier of masonry, and is capable of being used for transits, it has hitherto been principally used for determining polar distances, by actual measurement from the polar point; according to which mode, the uncertainty in the results, which commonly arises from variable refraction in ordinary measurements, is almost entirely obviated, and a repetition of any series of observations may be made on any part of the circle ad libitum, and with any number of readings to the number of fix at the same time; so that a single observation is made with as much accuracy, as can be obtained from an average of several successive observations taken with a repeating-circle of the same dimensions; and yet there is the power of repeating any observation in various positions. Mr. Pond has already published one volume of observations taken with this instrument, which completely verifies our affections, and in this first volume he has given a plan and section of this instrument, the circle of which is six feet two inches in diameter; but as Mr. Troughton intends to give a complete description thereof himself, as a paper suitable for the Philosophical Transactions, which, to be published therein, must be an original communication, Mr. Pond was not at liberty to describe the drawing which he has given as a frontispiece to his first volume; and as the description in question is not yet finifhed, we are in the same predicament with the astronomer-royal, and must consequently for the present forego the pleasure we had promised ourselves, of introducing this magnificent instrument to the notice of the public.

Transit, in Music, is nearly synonymous with modulation; it implies little more, in its technical use, than a change; and, in general, a change of key, from major to minor, or the contrary; or, indeed, from any one genus or key to another. Luckily no laws were laid down by our forefathers for transition, as for modulation, which we so long feared to violate.

Transition, in Rhetoric, a kind of connection in discourse, by which the several different parts and members of it are joined, so as to constitute one regular whole; or, as Voltaire defines it, it is a form of speech, by which the speaker, in a few words, tells his hearers both what he has said already, and what he next designs to say. Sometimes, however, in passing from one thing to another, a general hint of it is thought sufficient to prepare the hearers, without particularly specifying what has been said, or is next to follow.

Some place transition in the number of figures; others, with Quintilian, exclude it from that rank.

F. de Colonia makes two kinds of transitions, the one perfect, and the other imperfect.

Transition, Perfect, is that in which we briefly intimate what is said, and what remains to be said. As, Now that we have spoken of earth, there remains something to be said of peace. Satis multa de turpitudine: dicam delicatis, quod propofuit, de periculis. Uni epiflo reponsi: venio ad alteram: Sed hac uenem: illud recens: Cofarum meo confilio interfecimus.

Transition, Imperfect, is that in which only one of these is expressed. As, Let us now consider the consequences of... Populare hic locus, ut dicerent de—sed finis finit; nec enim pra laetitiam jam loqui possum; et hic laetitiam deferendi negat.

Transitions, in Geology, a name introduced by Werner to designate those rocks which, on account of their containing few organic remains, and lying immediately over other rocks which contain none, are supposed by him to have been formed when the world was passing from an uninhabitable to a habitable state. According to the fame geologist, transition rocks are of more recent formation than the lower or primary rocks, and older than the flinty flate, or stratified rocks, and are intermediate between both, being mostly of mechanical and partly of chemical formation. The rocks which are enumerated in this class by Werner, are transition lime-flone, transition trap, greywacke, and flinty flate. It is now, however, admitted, that the division made between transition rocks and the lower stratified or flinty rocks, has little or no foundation in nature, as these rocks are not unfrequently observed to alternate with each other. (See Rocks.) Nor is the absence of organic remains in the lower rocks, called primary, a decisive proof that they were formed previously to the existence of organic life upon our planet; for in a series of stratified rocks containing organic remains, we frequently meet with other beds interposed, in which no vestige whatever of such remains can be traced. Hence we may infer, that the processes by which the latter was consolidated, has destroyed the organic matter which they may have once contained. The absence of organic remains in silicious beds that have a crystalline granitic structure, is, we conceive, owing to the peculiar mode by which they were crystallized, as such beds sometimes repose on other beds abounding in marine shells. Nor can we be certain, that the lowest rocks of granite were formed before the existence of animal life on our planet. The more extensively modern geologists have carried their observations, the more numerous are the indications found of marine shells or vegetables occurring in alpine districts formerly regarded as primary; and if granitic rocks, wherever they occur, are invariably defiluete of extraneous fossils, we must attribute it to the peculiar mode of their formation, rather than to their priority of age.

The
The only circumstance which makes it probable, that the rocks classed as transition rocks, are the lowest in which the remains of organic substancess have ever been imbedded, is, that the fossils found in such rocks belong almost exclusively to different species of zoophytes and stell-fish, which may be regarded as the first or lowest links in the chain of animated beings. It is only in the upper strata that we meet with remains of animals poisselling the facultics of vision and locomotion, and a more complex organization. See Rock, Stratification, and Systems of Geology.

**TRANSLATION**, in Grammar, an epithet given to those verbs as figuratively an action which passes from the subject that does it, to, or upon, another subject which receives it. Under the head of verbs transitive, come what we usually call verbs active and passive: other verbs, whose action does not pass out of themselves, are called **intransitives**, and by some grammarians **intranebrates**.

In the Hebrew, the verb יָדַע, yada', in the Greek ἔρωμα, and in the Latin amare, are verbs purely neuter, or intransitive; or, as the Latin and Greek grammarians more usually express it, verbs subtransitive, signifying the mere existence of the thing, without the active or transitive conjugations.

**TRANSTORY**. in Common Law, stands opposite to local. See Action.

**TRANSTORY CHEF**. See CHEF.

**TRANSTORY TRASPASS**. See TRESPASS.

**TRANSLATION**, formed of trans, beyond, and latus, of foot, to carry: the act of transferring or removing a thing from one place to another.

We say, the translation of a bishop's see, a council, a seat of judicature, a parliament; the translation of the relics of a saint, the translation of the empire, &c.

The translations of bishops from one see to another are prohibited by the council of Nice, which declares them null, and appoints the translated bishop to return to his former church. The council of Sardica excludes translated bishops from communion. It has been observed, that no bishop was ever removed from a greater church to a lesser; and that those who thus quitted their churches, only did it out of ambition or avarice.

This discipline was generally observed for nine hundred years; and the first instance of any violation of note, was that of Pope Formosus, who was bishop of Porto. One of his successors took hold of this pretence to have him dug out of his grave; and a council, held soon after, forbid this translation to be made a precedent.

However, the same church allowed of some legitimate causes of translations, as the apparent advantage of the church; under which pretence, translations soon became so frequent, that for 500 or 600 years last past, they have been allowed a kind of common law.

The translation of a religious from one order to another cannot be effected without the consent of the pope; it is added, that it is not allowed to translate from a feverer rule to a laxer one.

**TRANSLATION** is also used for the version of a book or writing out of one language into another. See Version.

**TRANSMARINE, TRANSMARINUS**, something that comes from, or belongs to, the parts beyond sea.

**TRANSMARISCA**, in Ancient Geography, a town of Lower or Second Media, upon the route from Viminacium to Nicaea; between Apulia and Candidia. Anton. Itin.

**TRANSMIGRATION**, the removal or translation of a whole people into another country, by the power of a conqueror. See Migration.

**Transmigation** is particularly used for the passage of a soul out of one body into another; the same with what we otherwise call metempsychosis; which fee.

The Siamese, F. Tachard informs us, from a belief of the transmigration of souls into other bodies, forbear killing any beasts; left, by that means, they should dispossess the souls of their deceased relations.

**Transmigration**, Ionia. See Ionic.

**TRANSMISSION**, in Optics, &c. denotes the property of a transparent body, by which it suffuses the rays of light to pass through its substance; in which virtue, the word hands opposed to reflection.

Transmation is also frequently used in the same sense with refraction, because most bodies, in transmitting the rays, do also refract them.

For the cause of transmition, or the reason why some bodies transmit, and others reflect, the rays, see transparency and opacity.

The rays of light, as Isaac Newton observeth, are subject to fits of easy transmission and reflection. See Light and Reflection.

**TRANSMUTATION**, the act of transforming or changing one nature into another.

The term is chiefly used in chemistry and medicine. It has been greatly questioned, whether the transmutation of silver into gold, and of tin into silver, so much sought by the chemists, be possible or not.

The purest and subtlest parts of the food are transmuted or assimilated into the proper substance of the body. See Nutrition.

Nature, as Isaac Newton observeth, seems delighted with transmutations; he goes on to enumerate several kinds of natural transmutions; gross bodies and light, he supposes, may be mutually transmuted into each other; and adds, that all bodies receive their active force from the particles of light which enter their competition.

For all fixed bodies, when well heated, emit light as long as they continue so; and, again, light intermingles itself and inheres in bodies as often as its rays fall on the solid particles of those bodies.

Again, water, which is a fluid, volatile, tasteless salt, is by heat transmuted into vapour, which is a kind of air; and by cold into ice, which is a cold, transparent, brittle stone, easily divisible; and this stone is convertible again into water by heat, as vapour is by cold.

Earth by heat becomes fire, and by cold is turned into earth again: dense bodies are vapposed into various kinds of air, and that air reverts into gross bodies.

Quicksilver sometimes puts on the form of a fluid metal; sometimes it appears in the shape of a bell-metal, fragile salt, called sublimes; sometimes of a bell-metal, volatile, white, tasteless earth, called mercurius dulcis; by distillation, it becomes Lynceum; and by agitation in vacuo, it shines like fire, &c.

All bodies, beasts, fishes, insects, plants, &c., with all their various parts, grow and increase out of water, and aqueous and saline tinctures; and, by putrefaction, all of them revert into water, or an aqueous liquor, again.

Further, water exposed awhile to the open air, puts on a tincture, which, in process of time, has a sediment and a spirit; and, before putrefaction, yields nourishment both for animals and vegetables.

**Transmutation**, in Alchemy, denotes the act of changing or exalting imperfect metals into gold or silver.

This is also called the grand operation; and, they say, it is to be effected with the philosopher's stone.

The trick of transmuting cinnabar into silver is thus: the
the cinnabar, being bruised grossly, is stratified in a crucible with granulated silver, and the crucible placed in a great fire; and, after a due time for calcination, taken off; then the matter being poured out, is found to be cinnabar turned into real silver, though the silver grains appear in the same number and form as when they were put into the crucible; but the mischief is, coming to handle the grains of silver, you find them nothing but light friable bladders, which will crumble to pieces between the fingers.

Mr. Boyle, in his Sceptical Chemist, tells us, that two friends of his did, by urging mercury in a skillfully managed fire, turn it, almost weight for weight, into water; but he does not say what was the specific gravity of the produced water, nor of the remaining untransmutated mafs of mercury. He likewise assures us, that rain-water, being distilled and re-distilled, by a friend of his, nearly two hundred times, did, after distillation, leave at the bottom of the glafs body, a considerable quantity of a white earth; and that more plentifully in the latter distillations, than the former.

This he believed to be a certain quantity of water actually transmutated into earth, adding, that it was above twice as heavy specifically as common water, and of so fixed a nature, that it lay a considerable time, in a red-hot crucible, without losing any thing of its weight, or even permitting any smoke.

For the transmutation of iron into copper, see Copper and Vitriol.

Transmutation, in Geometry, denotes the reduction or change of one figure or body into another of the same area or solidity, but of a different form; as a triangle into a square, a pyramid into a parallelepiped, &c.

Transmutation, in the Higher Geometry, is used for the converting of a figure into another of the same kind and order, whose respective parts rise to the same dimensions in an equation, admit the same tangents, &c.

If a rectilinear figure be to be transmuted into another, it is sufficient that the intersections of the lines which compose it be transferred, and lines drawn through the same in the new figure.

If the figure to be transmuted be curvilinear, the points, tangents, and other right lines, by means of which the curved line is to be defined, must be transferred.

Transmutation of Colours. The change of colour of a decocction of the nephritic wood, according to the different lights it was viewed in, long perplexed those who attempted to account for it; but Wolfius has carried the experiments on this decocction much farther, and found a way of giving it its colours again, after taking them wholly away. If this decocction be held between the eye and the light, it appears of a blue colour; but if the eye be placed between it and the light, it appears then of a yellow or a red colour. If a few drops of oil of vitriol be dropped into it, it will appear of a gold yellow in whatever light it is viewed; but if too much of this oil be added, the whole becomes foul and obscure; and if a few drops do not produce the effect, it is a sign that the decocction is too strong, and that it must be diluted with water. See Colours.

Oil of vitriol has the same effect upon many other decocctions of the woods, particularly on that of Brazil wood, which is of a fine red, but immediately becomes yellow on dropping a small quantity of this acid into it. And as in the other instance, so in this, it is necessary to the success of the experiment, that the tincture be not over strong. A few drops of oil of tartar added to this yellow liquor turn it red again as at first; and if more oil of tartar be added, the colour becomes blueish, with a tinge of red, much stronger than the colour of the nephritic wood at first, when held between the eye and the light. In all experiments of this kind, the weakness of the tincture produces the greatest beauty; and therefore it is best, instead of making a decoction, to make only a cold infusion, by putting a small quantity of the chips of the wood into water, and letting this stand cold for some time.

A tincture of red roses, made with common water and oil of vitriol, is well known to be of a very beautiful red colour, yet when the water has stood ever so long on the roses alone, it has factly any colour; if it be strained off in this colourless state, and the oil of vitriol then added, the red colour is produced as strongly as if this acid had been dropped into the water, while the roses were yet in it. When the liquor is of this fine red colour, a small quantity ofoil of tartar makes it immediately green; and if more oil of vitriol be added to this green liquor, it becomes red again, but is muddy, and not so well coloured as before.

If a few drops of a solution of corrosive sublimate be added to this, it does not at all change colour; and on adding more water, with salt of tartar dissolved in it, the liquor became red again, but of a very different red from what it was before in its muddy state, being now clear and deeper. When the tincture of roses has scarcely any colour, a small quantity of salt of tartar makes it green, but a large quantity makes it yellow. A few drops of oil of vitriol added to this yellow liquor, turned it to a pale red, and this could never be made green again by oil of tartar. Alum-water, added to a solution of salt of tartar, makes a white and opaque fluid, though they are both separately pellucid.

What is most observable in these experiments on the infusion of woods, is, that oil of tartar, and a solution of salt of tartar in water, have a very different effect. Thus an infusion of Brazil wood is red, and on dropping into it a few drops of oil of vitriol, it becomes yellow. If oil of tartar be added to this liquor, it only makes it yet more yellow; but if a solution of salt of tartar in water be added to this, it makes it red again. Act. Erudit. ann. 1718. p. 322.

The solution of verdigris, which is green, becomes colourless by the affusion of spirit of nitre or spirit of vitriol, and by the affusion of the oil of tartar it becomes green again. The spirit of falc ammoniac gives it a purple colour, and oil of vitriol makes it pellucid. The solution of galls with vitriol gives black, the affusion of oil of vitriol destroys the blackness, and it becomes pellucid as before.

M. Mufchenbroeck thought it to be universally true, that yellow vegetables, dissolved in spirit of wine, gave yellow tinctures, which are either not at all, or very little changed by acid, alkaline, or any other salts; but he thought there were some exceptions, and says, that when oil of vitriol is put to yellow paint, called anceton, it becomes of a beautiful blue, which is destroyed by water or any salt. A small quantity of an astringent substance, with iron, gives a black colour; a greater quantity of the astringent produces blue, more of it makes a violet, and more still produces purple.

There are some tinctures, the colours of which depend upon the external air: such is the red tincture made of Canarian lichen, called orfelle, and water, a diluted spirit of wine, with lime and an urinous salt. For, if this tincture be put into a glass tube, hermetically sealed, in a few days it becomes colourless; and when the tube is opened the colour returns. The abbé Nollet made a variety of experiments with this tincture. To the same clafs may be referred the sympathetic inks.

Colours may be produced in liquours which originally have no colour: thus, spirit of wine with red roses, upon which, whilst it is yet white, any saline acid spirit is poured, in so small a quantity that the acid can hardly be perceived, produces...
produces a florid red. Many other red flowers hardly give any
colour to spirit of wine in a short time, yet give a red colour
by the addition of any of the acids. A solution of mercury
and oil of tartar gives orange; a solution of sublimate and
lime-water produces yellow. The tincture of red roses
with oil of tartar per deliquium, or with spirit of salt amno-
niac, gives green. In like manner, the tincture of many
red flowers it changes into green by an alkali. The tincture
of red roses and spirit of wine gives blue. The solution of
copper and spirit of salt ammoniac gives purple. The solu-
tion of sublimate and spirit of salt ammoniac gives white.
The solution of sal ammoniac, and that of vitriol, also the
tincture of red roses, or many other red flowers, and the
solution of copperas in water, and likewise the solution of
galls and copperas, produce black. The following table
exhibits the colours arising from different mixtures.

<table>
<thead>
<tr>
<th></th>
<th>Produce</th>
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<tbody>
<tr>
<td>1.</td>
<td>Yellow Tincture of red roses</td>
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<tr>
<td>2.</td>
<td>Green Tincture of crocus</td>
</tr>
<tr>
<td>4.</td>
<td>Red Tincture of red roses</td>
</tr>
<tr>
<td>5.</td>
<td>Blue Tincture of violet</td>
</tr>
<tr>
<td>7.</td>
<td>Blue Tincture of Hungarian vitriol</td>
</tr>
<tr>
<td>8.</td>
<td>Blue Solution of copper</td>
</tr>
<tr>
<td>9.</td>
<td>Blue Solution of Hungarian vitriol</td>
</tr>
<tr>
<td>10.</td>
<td>Violets Tincture of diplosperm, or iris, or any other flowers that give a violet colour in water</td>
</tr>
<tr>
<td></td>
<td>Alum dissolved in water</td>
</tr>
</tbody>
</table>

The result of a variety of mixtures to produce colours,
was recited before the Royal Society by Dr. Goddard in
1661, and may be seen in Birch's History, vol. i. p. 11.
Mr. Melville has made many observations on the tran-
sformation of colours by the light of different
burning bodies. Bodies of all the principal colours, e.g.
red, yellow, green, and blue, are very little altered, he
observes, when they are seen by the light of burning spirits;
but if salts be continually mixed with them, during the
burning, different changes ensue. When sal ammoniac,
potash, or alum, is infused, the colour of red bodies appears
somewhat faded and dirty. Green and blue appear much
the same as in candle-light, both being faint, and hardly dis-
tinguishable. White and yellow are hardly at all affected.

When nitre, or salpetre, is plentifully mixed with the
burning spirits, and the whole is stirred about briskly, the
brightest red bodies, seen by the light then emitted, are re-
duced to a dirty tawny brown, which seems to have nothing
of redness in it. Green is transformed into another sort of
brown, only distinguishable from the former by a certain in-
nclination to a livid olive colour. When nitre is mixed with
the spirits, one may still see some remains of greenish colour,
unless it be poured in very plentifully. Dark blue is hardly
to be known from black, except that it appears the deeper
black of the two. Light blue is changed into a very light
brown, of a peculiar kind. White assumes a livid yellow-
ish cast; and yellow alone appears unaltered, and extremely
luminous.

These experiments he made with different sorts of richly
coloured bodies, as silks, cloths, and paints. Polished cop-
pers, which had contracted from the air a high flaming
colour, was reduced, by the same light, to the appearance of
yellow before. The faces and hands of the spectaturs
appeared like those of a dead corpse; and other mixed co-
lours, which had red or green in their composition, undergo
the like changes.

Having placed a pasteboard, with a circular hole in it,
between his eyes and the flame of the spirits, in order to
diminish and circumscribe this object, he examined the con-
titution of those different lights with a prism, holding the
refracting angle upwards; and found that, in the first case,
when sal ammoniac, alum, or potash fell into the spirits,
rays of all kinds were emitted, but not in equal quantities,
the yellow being much more copious than all the rest put
at one time, and the red being more faint than the green and
blue.

In the light of spirits mixed with nitre, or salpetre, he
observed some blue, though exceedingly weak and elu-
dated. With the latter the green was equally faint, but
with the former pretty copious. But when either of these
salts was used, he could hardly perceive any trace of red,
especially when they were mixed in great plenty, and the
spirits constantly agitated. At every little intermission, in-
deed, the red rays would shew themselves very manifestly
below the hole, and red bodies seen by that light refumed
somewhat of their ordinary colour; and it was entertaining
to observe how both would vanish again at once, when the
fading and rivals were renewed.

The proportion in which the bright yellow exceeded the
other colours in this light, was still more extraordinary than
in the former: insomuch that the hole, seen through the
prism, appeared uniformly of that yellow, and as distinctly
terminated as through a plane glass; except that there was
adjoining to it, on the upper side, a very faint streak of
green and blue. White bodies illuminated with it, appeared
also through the prism perfectly well defined, both which,
he says, are very surprising phenomena to those who have
been accustomed to the use of the prism in heterogeneous
lights, where it never fails to throw confusion on the ex-
tremities of all visible objects.

Upon examining bubbles of soap and water in the same
light, he could only observe luminous streaks, separated by
dark ones, the green and blue being too weak to affect his

Transmutation of Plants. See Seeds and Degeneration.

Transom, among Builders, the piece that is framed
across a double light window.

Transom, among Mathematicians, denotes the vane of a
cross-raft; or a wooden member fixed across it, with a square
whereon it slides, &c.

Transoms, in a Ship, are beams and timbers extended
across the stern-post of a ship, to fortify her after-part, and
give it the figure most suitable to the service for which she
is calculated. See Ship-building.

The general figure or curve given to the ship by the dis-
position of the arms of the transoms, which are generally
closer in proportion to their distance from the wing-transom
downwards, in consequence of which it becomes extremely
narrow from the counter towards the keel, is called the fig-
ure of the transoms. Although these pieces are extremely dif-
fierent in their figures, according to the extent of the angles
formed by their branches or horns, each of them has never-theless a double curve, which is partly vertical, and partly horizontal, with regard to its situation in the ship. The former of these is called, by the artificers, the round-up, and the latter the round-off.

As the transoms fill up the whole space comprehended between the head of the stern-post above, and the aft-most floor-timbers below, it is necessary to distinguish them by particular names. Thus, the highest is called the swing-tranfom; the next, the deck-tranfom; and afterward follows the firft, second, and third tranfoms, together with the intermediate ones.

The highest tranfoms are connected to the ship's quarter by knees, which are bolted to those pieces, and to the floor-timbers. See SLEEPERS, Falconer.

TRANSPARENCY, Diaphaneity, in Physic, a quality in certain bodies, by which they give passage to the rays of light.

The transparency of natural bodies, as glafs, water, air, &c, have imputed to the great number and size of the pores or interstices between the particles of those bodies; but this account is exceedingly defective; for the most solid and opaque body in nature, we know, contains a great deal more pores than it does matter; a great deal more, fully, than is necessary for the passage of fo infinitely fine and subtile a body as light.

Aristotle, Defcartes, &c. place transparency in the rectitude or straightsnefs of the pores; by means of which, say they, the rays are enabled to make their way through without striking againft the solid parts, and being refracted back again: but this account, fay Isaac Newton fays, is imperfect; the quantity of pores, in all bodies, being sufficient to tranfmit all the rays that fall on them, however those pores be situated with refpeét to each other.

The cause, then, why all bodies are not transparent, muft not be ascribed to their wanting rectilinear pores; but either to the unequal density of the parts, or to the pores being filled with fome foreign matters, or to their being quite empty, by means of which the rays, in paffing through, undergoing a great variety of reflections and refractions, are perpetually diverted this way and that, till, at length, falling on some of the solid parts of the body, they are extinguished and absorbed.

Thus cork, paper, wood, &c. are opaque; whereas glafs, diamonds, &c. are transparent: the reafon is, that in the neighbourhood of parts equal in densi ty, fuch as thofe of glafs, water, diamonds, &c. are with refpeét to each other, the attraction being equal on every fide, no refLECTION or refraction ensues; but the rays, which entered the firft face of the bodies, proceed, without interruption; quite through the body, thofe few only excepted which chance to meet with the solid parts; but in the neighbourhood of parts that differ much in density, fuch as the parts of wood and paper are, both in refpeét of themselves, and of the air, or the empty fpaces in their pores; as the attraction will be very unequal, the reflections and refractions muft be very great; and therefore the rays will not be able to make their way through fuch bodies, but will be properly deflected, and at falk quite flop ped. See OPACITY.

TRANSPARENT; we think, would be as ufeful a term in muic, as in painting. We know that visibility and audibility are objects of two different fenses; but cleaners, chiarezza, is a favourite excellence with muicains, in speaking of counterpoint; and in comnodations of many different parts carrying on different deigns, that cleaners in their texture and arrangement, which enables the hearer to dif-entangle them, and to diftinguish the several parts through each other, but particularly in vocal muic, and to hear the principal melody through all the accompaniments, we think might with some degree of propriety be termed transparent.

TRANSPARENT Column. See COLUMN.

TRANSPIRATION, in Phyfology, an expreffion derived from the French, for the cutaneous exhalation. See INTEGRUMENTS.

TRANSPLANTATION, in Natural Magic, was used for a ridiculous sup posed method of curing difeafes by transferring them from one fubjeét to another; and was much in vogue among certain chemical, or rather sympa thetical physicians, fome ages ago.

This tranfplantation was effected, either by the ufe of a certain medium, called on that account a magnet; or, without that, only by fimple contact.

Transplantation, by means of the magnet, was of five kinds, viz. infusion, implantation, infipication, irration, and insemination; but the whole practice is now defervedly exploded.

TRANSPLANTATION, or Transplanting, in Agriculture and Gardening, the operation of removing plants and trees of various kinds from the situations and places in which they were originally fown, fet, or railed, and replanting them in others which are more convenient and fittable. It is practiced with a great number of each of these different sorts of vegetable productions.

With the former, for field crops, it is had recourse to with many of the cabbage tribe, and some other fuch sorts of plants, for wheat, and lately for potatoes. The transplanting of all the different sorts of plants of the firft of these kinds, should always be performed, as much as poffible, when the weather is in rather a moif flate, the ground hav ing previously been put into a fuitable state of preparation, by proper ploughing and other means. The plants are placed out, in fuch cafes, at different dilances, as from two to three feet or more, as the nature of the land and circumstances may direct.

In transplanting wheat plants, which is sometimes the cafe, it has been noticed to be a practice which is not likely to become general for whole fields, but that circumstances may not unfrequently occur where it may be attended with much benefit when employed in a partial manner; as in fuch cafes where fome accidental failures may have happened to the parts of fields, which on a careful examination may be found to have wholly failed, or to be thinner than the others. In all fuch infances, whatever may have been the cafe of the deficiency,—whether from the wheat plants having been destroyed by wetnefs during the winter, or any other cafe,—fome parts of the fame fields will moftly be found, from which plants may be drawn for this purpose, without injury; and if attention be paid to good and neat cultivation, the vacancies may be usefully filled up by transplanting from fuch spots, where it may sometimes happen that the plants are fo thick as to do harm to each other, and, of course, service be done to the crops in fuch parts, while the vacant land is filling with them in other places, and by fuch means the whole will be rendered more perfect, uniform, and regular, improving the appearance as well as the abundance of the crops.

The practice of transplanting wheat in the early spring months, in fhef and other cafes, has long been advised by different writers, and lately had recourse to, with great succces, in the parih of Bocking in Essex, to fome considerable extent. It was there performed with the common dibble at the dilance of twelve inches, but nine would have been pre-
ferred, had it not been apprehended that the plants which could be collected would be insufficient.

It is thought capable of being more generally introduced with great advantage not only in the abundance of the crops and the saving of feed, but in the vast increase of employment which it furnishes for the labouring poor of different descriptions, as well as in some other respects, as may be seen in the first volume of the Corrected Agricultural Survey of the above county.

In regard to the transplanting of potatoes, it has been shewn by the trials of the Rev. Mr. Cartwright, which are described in a paper in the fifth volume of Communications to the Board of Agriculture, that there is no plant which admits of being transplanted with more complete success. It is suggested as a practice which, besides affording hints to the farmer for the improvement of the field-crops of this fort, may throw in the way of the cottager some useful information, as it may teach him, that after he has had crops of spring and early summer vegetables in his garden, he may procure from it, by being provided with a small bed of the nursery kind for potato plants, a valuable supply of useful food for his winter consumption and advantage.

The crops in these transplantings were after tares of the winter kind, and only top-dressed for, which is a considerable saving of manure.

In garden culture, transplanting is essentially necessary for a great variety of different plants of the eculent and other kinds, as has been seen under their different heads. And it has lately been found to be a considerable improvement in the culture of the onion, both in the garden and the field. When transplanted in moist weather into small shallow drills, eight or nine inches apart on beds, having the whole roots first well dipped in a thick puddle liquid, composed of one part foot, and three parts earth, with a sufficient quantity of water to form the mixture, they are said to succeed perfectly. It is a method too which has the advantage of being less expensive, and of course more profitable, than the common one, as the work can be cheaply done by boys or girls; it admits of clearing the plants of weeds better, which is highly beneficial to their growth; a few small beds thickly sown will furnish plants for as many acres; the ground which is to be planted may be under winter or spring crops, it being sufficient to clear it of them by the end of April, or the beginning of the following month, when the transplanting of the onions is to take place, and those contained in the feed-beds will, in the mean time, afford the necessary supplies for family use or the market. It has besides the benefit of having the onions better in quality and larger in size, and the crops wholly free from worms and the rot. See a paper on this subject in the first volume of the Memoirs of the Caledonian Horticultural Society.

With the latter, or plants of the tree-kind, transplanting is performed both for thofe of the foreif and fruit kinds in a great number of cafes. It is a practice which is much had recourse to in nursery-gardens for raising the different kinds while in their early growths, as the first two or three years. But for providing timber-wood, especially with some sorts of trees, as the oak and a few others, it is probably better not to transplant at all, as the produce is said to be firmer, more durable, and better for many uses, where it is not done. See Timber.

Though the work of transplanting be Molly practised while the trees are in this young state, it is capable of being effected, by proper management and attention, with perfect success, when they are of considerably larger growth. Mr. Amos, in his work on "Agriculture and Planting," has observed that, as in forming various sorts of ornamental undertakings with trees, as those of extensive lawns and fields intersected with large collections of such as are of the forest kind, and flowering shrubs placed out in the wilderness manner, with serpentine walks and paths running through the whole, the designs often become defective and unsatisfactory, from the want of various sorts of proper large-sized trees: to supply the defect in such cases, plenty of different proper-sized trees should always be at command, for the purpose of transplanting into bare fields, parks, and about naked new buildings, or into other situations where they may be most capable of imitating that charming tasteful negligence of nature which is so ravishingly pleasing to the senses. And that, in order to prepare the young trees for being thus transplanted when large, they should, if it is said, be continued in the feed-beds for the space of two years and a half, and then be set out at greater distances, reducing the tap-roots considerably, but those of the lateral kind only sparingly. That as in such young trees the root grows faster than the stem, (as an oak-plant a foot and a half in height has sometimes a root four feet in length,) the necessity of muting the root, especially the tap one, in such cases, is clearly shewn, the plants then emitting radicles in every direction, grow faster than if the roots had remained perfect. And that if a plant, or tree, be transplanted in this state, it succeeds with greater certainty the more abundant radicles are preferred to the root. When such trees have remained two years in the nursery-beds, they should be again removed, dressing their roots as before, and increasing the distance between them, when they may continue three or four years more. After which they may be put out in collections, where they are to remain for good, or until wanted for transplanting. That as in transplanting large trees, some large fibres of the roots are unavoidably broken and mutilated, and consequently the absorption of nutriment in the plant diminished, it is necessary that boughs answer ing to the defroyed roots should be cut away, in order to lessen the transpiration in proportion to the quantity of food that may be taken up.

The most proper and desirable sorts of trees for transplanting in this large state, are, it is conceived, the different sorts of elms, of which the English is the best, as it is more airy, and soonest recovers its wounds. The lime, too, will bear to be removed at a great size, as its wounds soon heal, and it may be formed into any shape desired. The oak, the beech, and the ash, will likewise bear to be removed when rather large, but they require more care in the work than the former: on the whole, those trees, the bark of which is the thinnest and smoothest, will be the most proper for this purpose. The hornbeam, the fycamore, the large-leaved maple, the sweet and horse-chestnut, and the laburnum, will all bear transplanting and removing, if they do not exceed fifteen or sixteen years' growth, and from twenty to twenty-five feet in height: if they are older and larger when this is done, they do not recover their wounds so perfectly as to become handorne trees. The larch and mountain-ash also bear transplanting and removing when large, but they should not exceed twelve years' growth. The balsam poplar of Canada, too, is a fine plant of the tree-kind, which is railed with much ease, is hardly, quick in its growth, and will bear to be transplanted and removed at a great size. And the crab-tree and white-thorn will suffer themselves to be transplanted at a large growth, when in a healthy and growing state; and that as few trees exceed them in beauty or fragrance in the spring season, or their

rich
TRANSLANTATION.

Rich glow of fruit in the autumn, they may be transplanted out singly into lawns, fields, and parks, where, when judiciously intermixed with other trees, they may highly decorate such situations. The elevation of flatly trees in clumps, parks, lawns, or fields, is considered, on the whole, as having a most agreeable effect, but that in new designs they cannot often be had without waiting many years, and incurring much labour, difficulty, and expense. However, by means of the directions which have been given above, and the use of the transplanter for large trees, it is thought the difficulty may be greatly removed, and a figure be soon made, even in bare fields, parks, and about new-built houses, without suffering such inconveniences, which must be a great inducement to such persons as are advanced in life to have recourse to the practice. See Transplanter, Tree.

In the work of preparing for the removal and transplanting of large tall forest-trees, it is recommended as proper to dig a circular trench all round them two or three feet deep, as early as possible in the spring; by which many new roots will shoot from those which have their ends cut off, and by which the balls of earth will be better held together, when the trees are removed in the succeeding autumn; and, by their having previously produced so many more fine radicles of the absorptive kind, be more certain of growing in their new situations. After which, the first step to be taken in the following autumn, is to mark out the places where the trees are to be removed and transplanted to, and there to dig pits three, four, five, or six feet wide, having the depth of from twenty-four to thirty-fix inches, as the size of the roots and balls of earth which hang about them may be. The top-soil in these diggings is to be thrown to the sides of the pits where the trees are to come, and the bottom or poor soil to the other sides. It this flate the pits are to remain until the trees are nearly ready for removal, which is to be effected in this manner, and is the next step in the busines. It is carefully to raise the trees which are to be the most healthy, and such as are of the pyramidal form, with as many roots, and thick fibres, and as much earth about them as possible. This is to be accomplished by digging trenches round about them, two, three, or four feet from the bodies of the trees, as their sizes may be, and about three or four feet deep, sloping them on the sides where the transplanter is to receive the trees. Then to bend the trees so far to one side, by the assistance of ropes, that the bottom roots may be easily got at, when they may be cut across with a sharp hatchet, and the extremities smoothed, which have been scattered, by a sharp hedging-hill, when rearing them upright again, bend them to the contrary side, and dres the roots in the same way, then raise them up a second time, when they will be ready for transplanting. In which case, it is directed that one set of hands, as one, two, or three men, should fill the pits half full of water, the top-soil and other fresh mould being mixed with it to the confluence of a thin puddle. That another set of men, as two, four, six, or eight hands, as the sizes of the trees may be, should rear up the transplanter of the trees against them by means of the rope for the purpose, balancing them properly by the machine, and leaving the fore-carriage part of it upon the ground, taking care to surround the places well with straw, where they rest upon the bars and bolts, in order to prevent the bark from being galled and rubbed off, which would greatly injure the trees. The whole should then be pulled and brought down together, in a gentle manner, by the rope for the purpose; three or four men and a horse being employed in the busines, where necessary, readying well the motion downwards, and at the same time a man or two are to guide the bolt of the machine into the fore-carriage, into which the horses are then to be put, and the trees conveyed to the pits, which by this time will be ready for their reception. The carriage is then to be drawn up along that side of the pits on which the top-soil was laid, backing it until it gets into such a position, that by rearing the machine and trees upright, as in loading, the root parts with the balls of earth about them, may be dropped exactly into the centres of the pits, amidst the puddle, which will soon run among and into the cavities of the balls hanging to the roots, as to surround and cover every fibre. The pits are then to be filled completely up, and a mound of earth raised about a foot higher than the surface all round each of the trees to two or three feet distant from the centres, hollowing it towards the trees, for the better reception and retention of moisiture. After this, it is supposed the trees will be able to brave and defy the rudest assaults of the winds, without any supports, even at the first transplanting out. In this manner, the whole busines of transplanting large forest-trees is to be proceeded in, and which has been found very successful in a variety of trials.

In garden management, too, large old fruit-trees of both the wall, espalier and standard kinds have lately been found capable of being transplanted with great success and advantage, when performed somewhat in this simple manner. When for large wall-trees, it is to be done by forming a half-circle for each in extent equal to the size of the trees, as seven or eight feet for such as cover a large space, measuring from the trunks of them; digging a trench round that three feet in width, and fix inches below the roots, carefully preferring the whole, and working out the earth from among them with a blunt tool, and caiming out the loose mould by the spade. Proceeding thus until got fully under the trees to be raised. The roots are then to be tied loosely together, and the branches freed from the walls, and put in parcels to prevent their being injured. The trees are now to be conveyed to the places into which they are to be transplanted; where proper-sized pits, for allowing the roots to be spread out and extended, are to be provided, placing them upright in them, using fresh earth alone or mixed with dung, and disposing them, so as that the surface roots may be equal to the top of the border in which they are put; then packing in the well-broken earth underneath, and for about a foot round the bottoms of the trunks, to fill all vacancies where the roots proceed from. After which, the whole of the perfect roots are to be attentively spread out at full length, cutting off any dead, bruised, or knotty parts; the ends of the remaining ones being smoothed and preferred at different lengths, keeping some at full length, others at five, four, and three feet, and a few even at one foot long, taking care to fave as many of the small fibres attached to the leading roots as possible; beginning by laying the whole out in sets or layers from the bottom at the wall-side of the half-circle, in the usual manner, until the top be reached, arranging the small fibres in regular order, and covering the different layers of roots with two or three inches in thicknesses of mould, packing it in well by the hand, and never setting the foot on the roots which have been covered. Proceeding in this way with each side of the half-circle, until they meet in the middle part of it, raising the whole with earth to the height of two inches above the level of the border; and above all applying three inches thick of good rotten dung. A full watering is then to be given, to settle the earth about the roots. Boards are to be laid to prevent the roots being trodden upon in nai-
ing the trees, the principal branches being only first secured, the whole being completed when the ground has fully settled.

The transplanting of espalier and standard trees only differs in this, that a full circle is to be dug round them.

The most proper seasons for transplanting large fruit-trees, are either in the beginning of the autumn, or just before the spring, in mild weather.

A great number of such large trees have been transplanted in this manner with complete success, some of which have borne half crops the first year afterwards, and others more, the fruit in most cases being greatly improved, as may be fully seen by consultating different papers on the subject in the volume of Horticultural Transactions already noticed.

For fruit-grounds, the young flocks for apple-tree plants are mostly in a proper state for transplanting out the second or third year of their growth. See Stocks, Apple, &c.

The transplantation of the blossom-buds of fruit and other trees has lately also been tried, by transferring the abundant buds of this fruit, of one tree to the barren branches of others, which is said to be capable of being performed with facility, and perhaps considerable advantage, in some cases. Such buds of pear-trees, when inserted into the strong young shoots of old ones, may afford abundant crops of very fine pears, and be gained with little trouble. The buds of those pear-trees are the best which have been formed upon the bases of the abortive bunches of blossoms of the preceding year; and that, instead of taking out the wood of the bud wholly, as is usual, it is most advantageous to let it remain in small quantities, only paring it very thin. See a Paper in the London Horticultural Transactions, vol. ii.

Transplantation of Flower-Plants, among Florists, the means of putting out and managing the different sorts of young plants of this kind. Work of this sort should always be performed according to the particular nature and habits of growth of the several kinds of these plants. In the auricula, the polyanthus, and different other similar kinds, the transplanting is often done early in the spring season by some; while others perform it annually about the beginning of the autumn. Especially for the first of these sorts; but probably the most suitable period is that about the beginning of the first of the above seasons, when the weather is rather flowery, though it may often be performed later with good success. Those plants designed for very strong blooming, should, however, never be transplanted, either early in the spring or too late in the summer, as they always require to get well-rooted before the winter season sets in. But notwithstanding the young offsets and other plants are to be transplanted in the above manner into their small pots, the large strong-blowing roots are not to be transplanted or removed more frequently than once in every two or three years, as the risk of losing fine strong flowers is otherwise very great, as plants of this sort never thrive in a right manner, until their roots have reached the sides of the pots, which rarely happens in so short a time as twelve months; but a difference is to be made, in performing this sort of work, between the plants which throw out suckers or offsets in great abundance, and such as do not; as the former require more frequent transplanting, all or most of such parts being carefully pared off and removed at the time; while in the latter it need not be so often. Where plants of strong superior bloom for increase are wanted, it is of material consequence to keep all such suckers and offsets from growing on the flocks of the old plants without fibres, they being kept constantly well rubbed off while of very small sizes, but those that rise from below the surface of the earth need not be so much regarded.

It is thought by some, that the large healthy strong blooming plants of this sort need not be removed or transplanted, and have the earth shaken wholly from their roots every year, as is the usual practice; as they have been found to do better without, by having occasional fresh earthings without removing them from the pots in fowne late trials. They should not, however, remain longer in this way than the third year. Florists in general have, it is supposed, been too fond of frequently transplanting or removing the large blooming plants of this sort, as once in two, or not more than three years, will be found sufficient, and more beneficial. The plants of this large blooming kind are not by any means to be transplanted or removed in dry hot times, as by shaking the mould cleanly from the roots of the plants, fresh fibres will not be freely drawn, unless the leaf be inclined to be flowery, and there be what is termed a cool moist state of the air. Fine young maiden plants may, however, sometimes be transplanted into small pots in such dry weather, being slipped out of the pots with the whole balls of earth about them, and then immediately replanted in full-sized blooming pots for the ensuing season.

In short, in transplanting these as well as many other sorts of flower-plants, much must always depend upon the state and condition in which the plants are found.

Where the plants of this kind have not been transplanted for some length of time, as two or three years, the small roots having filled the pots, the large, the tap, or the carrot root, as it is often termed, may have become so long as to stand in need of shortening by taking it out of the pot, shaking the earth away from it, and doing what is necessary, as by remaining too long it either gets rotten at the end, and constantly keeps the plant weak, or becomes too long for a common pot; besides, it wants shifting or transplanting every year, and never produces fine strong flowers. The small roots are to be reduced to about a dozen, those nearest the leaves being left for supporting the plants. Where there is any canker or rottenness in the root, it is to be cut off the quick or quite found parts, and the wounded part secured by the use of a composition made of bees-wax, turpentine, and white resin, and be made to crust over by exposure to the sun. Where large blooming or other plants of this sort to be removed have been in the pots only one year since the last transplanting, they are to be slipped out of the pots, with all the earth about them; and as the roots will be small and but little matted, it need not be shaken from them, only cutting it and the fibres of the roots down to a small ball in each plant, according to their ages and sizes. Some, however, do not like this method, but remove all the earth in transplanting them.

Different other fine flower-plants are to be managed somewhat in the manner which has been thus laid down in transplanting them, as the differences of their nature and habits may direct, only they will, for the most part, seldom require so many transplantations; indeed once or twice will almost always be as many as are necessary for them.

Transplanted or Ground Onion, in Gardening, a new sort of root of this kind lately brought from Egypt, and introduced into the northern parts of this island by Mr. J. Burn, captain in the royal navy, whence it is sometimes called by that name.

The manner of its cultivation, uses, and advantages, are thus described in a paper in the Scotch Horticultural Memoirs. The roots, being separated from the branches in which they grow, should be put out or transplanted into
any ground that is considered suitable for the common root of this fort, the soil being firft well prepared and enriched by the use of horse-dung in a reduced state; the plants or roots are then to be covered with only about one inch in depth of earth. The bell and most proper time for the putting them out or transplanting them is during the month of April. They should be put about a foot or eighteen inches afunder. They grow and are produced in clusters, some what in the manner of the bunches of grapes or currants; some growing in a round, others in a conical form or shape; those on the surface being the largest, while those in the centre are usually the soonest ripe. It is necessary that they should be taken up as they ripen, and when they are intended for keeping, they may be taken up rather before they are completely ripe.

It was found that two roots, the tops of which had begun to decay in the beginning of August, and which had been raised from the ground in the beginning of the following month, produced, in one cafe, nine onions, and in the other twelve. The onions in these cafes were of very different sizes, but the whole, when taken together, weighed more than a pound. Twenty-three onions of this fort, when planted out, are however said, in another instance, to have produced upwards of six hundred fine plants at the same time.

The circumstance in which this fort chiefly differs from the common Deptford and Stratford feed-kinds is, that it is larger, as in taste the quality is much the same. But it has, it is said, a material advantage over the feed-onion in this particular, that if planted about the middle of April, it will be fully ripe about the same time in the following September. Besides, it is not liable to accidents from any badness, imperfection, or too moist or too dry season, as is often the case in the common feed-onion. Another great advantage the transplanted or ground onion has over the feed fort is, that no infestation has yet occurred where it has been injured by vermin or insects, which is frequently the case with the feed-kind.

This fort of onion would seem on several accounts to deserve further attention to its cultivation and growth in this very uncertain climate for the common crops of such fruits.

TRANSPANTER, TRE, in Agriculture and Gardening, a machine or contrivance constructed for the purpose of affisting and facilitating the means of transplanting and removing trees of large growths and fizes.

A very simple and useful contrivance or machine of this kind has been given by Mr. Amos in his practical work on "Agriculture and Planting," with a correct representation of the same. It is simply composed of the two hind and the two fore-wheels and carriage part of a farm-waggon, with a platform, and diagonal frame raised and erected upon them so as to be capable of receiving the tree, and of retaining it in firm, steady position, until it be conveyed to the place where it is wanted to be replanted, when it can be let down with great care and readiness into the hole where it is to be set and grow.

Much facility and dispatch are given in replanting large trees by machinery of this kind for ornament or other uses. See Transplantation.

TRANSPORT, Ship, is a vessel used to convey provisions, warlike flores, folders, &c. from one place to another; also convicts over the seas.

TRANSPORTATION, the act of conveying or carrying a thing from one place or country to another. In matters of commerce, transportation is of equal import with re-exportation, viz. the taking up of commodities in one foreign state or kingdom, bringing them hither, and paying duties for them; and then conveying them into some other foreign state; by which it is distinguished from importation and exportation; where the commodities are either carried originally out of, or brought finally into, our own kingdom.

TRANSPORTATION, in Law, is also a kind of punishment, or, more properly, an alleviation or commutation of punishment, for criminals convicted of felony; who, for the first offence, unless it be an extraordinary one, are ordinarily transported to some foreign country for a term of years, or for life; within which, if they return, they are executed without farther trial than ascertaining their identity.

This is made felony without benefit of clergy by statutes 4 Geo. I. cap. 11. 6 Geo. I. cap. 23. 16 Geo. II. cap. 15. and 8 Geo. III. cap. 15. as is also the affiling transports to escape from such as are conveying them to the port of transportation.

Exile and transportation are punishments at present unknown to the common law; and whenever the latter is now inflicted, it is either by the choice of the criminal himself, to escape a capital punishment, or else by the express direction of some modern act of parliament. Accordingly, it was enacted by the statutes 4 Geo. I. cap. 11. and 6 Geo. I. cap. 23, that when any persons shall be convicted of any larceny or felony, who by the law shall be entitled to the benefit of clergy, and liable only to the penalties of burning in the hand or whipping, the court in their discretion, instead of such burning in the hand or whipping, may direct such offenders to be transported to America (or, by statute 19 Geo. III. cap. 74, to any other parts beyond the seas) for seven years. And by the subsequent statutes 16 Geo. II. cap. 15. and 8 Geo. III. cap. 15. many wife provisions are made for the more speedy and effectual execution of the laws relating to transportation, and the conviction of such as transgress them. But now, by the statute 19 Geo. III. cap. 74, all offenders liable to transportation may, in lieu thereof, at the discretion of the judges, be employed, if males (except in the case of petty larceny) in hard labour for the benefit of some public Navigation; or, whether males or females, may, in all cases, be confined to hard labour in certain penitentiary houses, to be erected by virtue of the said act, for the several terms therein specified, but in no case exceeding seven years; with a power of subsequent mitigation, and even of reward, in case of their good behaviour; but if they escape and are retaken, for the first time an addition of three years is made to the term of their confinement; and a second escape is felony without benefit of clergy.

Transportation is said to have been first inflicted as a punishment by 39 Eliz. cap. 4. Blacki. Com. vol. iv.

TRANSPORTATION OF PLANTS, is the removal of them from one country to another: with respect to which great caution is necessary. The plants sent from a hotter country to a colder should be transported in the spring of the year, that the heat of the season may be advancing as they approach the colder climates; and, on the contrary, those which are sent from a colder country to a hotter should be sent in the beginning of winter.

The best way of packing up plants for a voyage, if they be such as will not bear keeping out of the earth, is to have boxes with handles, and holes bored in their bottoms to let out the moisture, filling them with earth, and planting the roots as close together as may be; the plants should be set in these boxes a fortnight or three weeks before they are to be put on board, and in good weather they
they should be set upon the deck, and in bad removed or covered with a tarpaulin. If they are going from a hotter country to a colder one, they must have very little moisture; if, on the contrary, they are going from a colder to a warmer, they may be allowed water more largely, and being shaded from the heat of the sun, they will come safe. Very many plants, however, will live out of the earth a great while; as the fuchias, euphorbias, ficoids, and other succulent ones. These need no other care than the packing them up with moss in a clofet-box; and there should be a little hay put between them, to prevent them from wounding or bruising one another, and holes bored in the boxes, to keep them from heating and putreying. In this manner they will come safe from a voyage of two or three, or even four or five months. Several trees also will come safely in the same manner, taking them up at a season when they have done growing, and packing them up with moss. Of this sort are oranges, olives, capers, jasmines, and pomegranate-trees. These, and many others, are annually brought over thus from Italy; and though they are three or four months in the passage, seldom miscarry. And the best way of sending over seeds, is in their natural husks, in a bag, or packed up in a gourd-shell, keeping them dry, and out of the way of vermin. Miller. See SEED.

Those who are desirous of particular instructions with regard to the best means of collecting both seeds and plants in different countries, and of preferring them during a voyage hither in a vegetating state, may consult Mr. Ellis's Directions for bringing over Seeds and Plants from the East Indies, and other different Countries, in a State of Vegetation, &c. 4to. 1770.

TRANSPORTING, in Sea Language, the act of removing a ship from one place to another, by the help of anchors and ropes. See WARP.

TRANPOSITION, in Algebra, the bringing any term of an equation over to the other side. Thus, if \( a + b = c \), and you may make \( a = c - b \); \( b \) is said to be transposed. See REDUCTION OF EQUATIONS.

TRANPOSITION, in Grammar, a disturbing or dislocating of the words in a discourse; or a changing of their natural order of construction, to please the ear, by rendering the contexture more easy, smooth, and harmonious. A transposition, which renders the sense perplexed, is vicious. The construction of the ancient languages, being much more artful than that of the modern ones, allowed of much greater, and more frequent transpositions. The English, French, &c. scarcely ever allow of them but in oratory and poetry; in which cases, they serve to give a force and energy to the discourse, or the verse, and to prevent their languishing.

TRANPOSITION, in Music. We will venture to say, from long experience, that no musician can transpose at Sight, with certainty and firmness, but by a perfect knowledge of all the clefs necessary to change any one of the seven notes in music to any other we please. (See CLEFS.) This was Dr. Pepusch's method of teaching transposition, though not very clearly explained in his treatise; and Mr. Galliard's method, which he has made perfectly intelligible by a plate, in his translation of Tofii Cerone, in 1614, seems to have been the inventor of this method. See CERONE.

The transposer, besides changing the notes higher or lower by imaginary clefs, without changing their original places on the staff, must likewise know what sharps and flats belong to every key. If, for instance, we wanted to transpose our national supplication of "God save great George our King!" from G natural to Eb, a major third lower, we have only to imagine a clef that will make the second line E, which is the soprano, or tenor clef, on the first line. If, again, a finger wished to have this favourite air a third higher than G, which is Bb, the base clef with two flats will render all the notes, which with the treble clefs were in G, a minor third higher.

Now to render G on the fourth space in the base Eb, we have only to suppose the treble clef in the accompaniments, instead of the base. And to render the fourth space Bb, instead of G natural, we have only to imagine the base clef on the third line with two flats, instead of the fourth with one sharp.

TRAN-S-ART, in Geography, a town of Algiers, near the coast of the Mediterranean, on a gulf called the Immisfe; 30 miles S.W. of Oran.

TRAN-STRAND, a town of Sweden, in Dalecarlia; 50 miles N.W. of Falun.

TRANSTRUM, in the Naval Architecture of the Ancients, a term used to express a sort of cros or transverse seats that were placed in the polycracy galleries of those times, and served for the places of several of the rows of men, who could move and work their oars under the seats of the other or lateral rowers of the next tire.

Meibomius, who has written expressly on the naval architecture of the ancients, has better understood the places and use of these transtra, than any other author of late times; by a proper arrangement of these seats, and the lateral ones above and below each, he has taken off greatly from the height allowed by Scaliger, and others, to the polycracy vesels.

TRAN-SUBSTANTIATION, TRANSUBSTANTIATION, in the Roman Theology, the suppos'd conversion or change of the substance of the bread and wine, in the eucharist, into the body and blood of Jesus Christ.

Transubstantiation, taken in its general and literal sense, implies any change of one substance into another. Thus, the change of Moses's rod into a serpent; of the waters of the Nile into blood; of Lot's wife into a pillar of salt; were preternatural transubstantiations: and the change of the food we eat into the substance of our bodies, is a natural transubstantiation.

But the word, in its proper and technical sense, is restrained to the miraculous change which the Romish church holds is wrought in the sacrament, by the consecration of the priest.

One of the great articles of that church, rejected by the reformed, is that of transubstantiation; the latter maintaining the transubstantiation to be only figurative, and the former affirming it to be real.

The reformed interpreters, is, in the text Hoc est corpus mecum, This is my body, by signification, q. d. This signifies my body.
body: but the council of Trent stand up strenuously for the literal sense of the verb. Thus, in can. 1.fell. 15. of that council, it is expressly decreed, that, in transubstantiation, the body and blood of our Lord Jesus Christ are truly, really, and substantially, under the species of bread and wine.

It is added, that by truly, we mean properly; and not only by signification, as if the eucharist were no more than a sign of the body and blood of Jesus Christ: that by really, we mean in fact, and not only in figure, as if the eucharist were only a figure and representation of the body and blood of the Saviour of the world; and that by substantially, we mean in substance, and not only in virtue and energy. Thus is truly opposed to a simple sign, really to a figure, and substantially to energy or virtue.

This doctrine was established in the fourth general Lateran council, under pope Innocent III., in 1215, who is said to have introduced and established the use of the term transubstantiation, which was hitherto absolutely unknown; though some say that Stephen, bishop of Autun, first used this term. Burnet on the Articles, p. 312.

It was principally owing to the authority of Lanfranc, the principal champion of this new doctrine against Berengarius, supported by Rome, that so strange a tenet was established in the eleventh century, both in England and France. At the beginning of this century it was unknown to the church of England, as is incontestably proved by the epistles and canons of Elfric, archbishop of Canterbury, and by the prayers and homilies used at that time.

It seems difficult, at first sight, to account for the zeal of Rome in advancing and propagating a doctrine fo full of absurdity as that of transubstantiation. What use it may be said, could there be in understanding a figurative expression (with which manner of speaking the Scripture so much abounds) according to the letter, which makes it nonsense; when that nonsense does not appear to be productive either of power or profit to the church? The supremacy and infallibility of the bishops of Rome; the doctrine of purgatory, masses, and prayers for the dead; the worship of saints and images; the celibacy of the clergy; the merit of monastic vows; the necessity of confession to, and abolution by a priest, for the remission of sins; the power of the pope to grant indulgences, and apply to the benefit of other men the works of supererogation done by saints, and therefore belonging to the treasury of the church: all these opinions have a clear and evident tendency to raise and support the dominion and wealth of the Roman see and the clergy: whereas the multiplied contradictions and impossibilities contained in the notion of transubstantiation, seem to serve no purpose, but to expose the Christian faith to the ridicule and contempt of the Jews and Mahometans, or other unbelievers. Nevertheless, the solution of this difficulty may be found in the words of pope Pechal II., viz. "That it was a most execrable thing, that these hands, which had received such eminent power above what had been granted to the angels themselves, as, by their ministry to create God the creator of all, and offer up the fame God, before the face of God the Father, for the redemption and salvation of the whole world, should defecde to such ignominy, as, to be put, in sign of subjection, in the hands of princes, &c."

The same words were also used by pope Urban II. at the council of Bari. And certainly nothing could so raze the idea of the priesthood, or produce such veneration for them in the minds of the people, as their being suppofed to possess this more than angelical power. Lyttelton's Hist. of King Henry II., vol. 1.

Transubstantiation, Declaration against. See Declaration.

Transversalis colli, transversaire grels, in Anatomy, a small narrow muscle, placed at the lower and lateral part of the neck, and upper part of the back, where it extends from the transverse processes of the five or fix lower cervical vertebrae, to the corresponding processes of four or five dorsal vertebrae after the second. The splenius, levator scapulae, fa-

crowlumbaris, and longissimus dorfi, cover it behind, where it is inseparably connected to the two latter: it lies upon the tracheo-maloidens, to which it is also intimately connected, the complexus, and multifidus spinae. The front edge of the muscle is attached to the cervical transverse processes already mentioned: it passes over the first of these two first dorsal vertebrae, and is then attached to the transverse processes of the four or five following ones. These attachments are effected by slender tendons, connected with those of the splenius, levator scapulae, and multifidus spinae. It will extend the neck on the back; or, if the muscle of one side acts separately, it will incline the neck to its own side. Transverse, something that goes across another from corner to corner.

Thus heads and bars, in heraldry, are transverse pieces, or bearings: the diagonals of a parallelogram, or a square, are transverse lines.

Lines which make intersections with perpendiculars, are also called oblique or transverse lines.

Transverse Axis, or Diameter, called also the first or principal axis. See Axis, Diameter, and Latus-Transversum.

The transverse axis of an ellipse is the longer axis, or that which transverses it lengthwise, in contradistinction from the conjugate one. See Conic Sections, and Ellipses.

For the transverse axis of the hyperbola, see Conic Sections, and Hyperbola.

Transverso-spinalis, in Anatomy, a name sometimes given to the multifidus spinae. See Multipidus.

Transversus abdominis, a broad muscle of the abdomen. See Obliquus.

Transversus nasi, a synonyme of the constrictor narium. See Nose.

Transversus peclis, transversalis des ortis, a small muscle lying across the foot, immediately under the heads of the metatarsal bones, and extending from the four last of these bones to the first phalanx of the great toe. It is thin and fleasy; covered above by the metatarsal bones and interossei muscles, and covering below the flexor tendons, arteries and nerves of the toes. It arises from the heads of the four last metatarsal bones, and is inserted, together with the tendon of the adductor pollicis pedis, in the outside of the basis of the first phalanx of the great toe. It will approximate the great toe to the others; and by drawing the toes together, from side to side, will render the foot concave. Transversus perinei, two muscles of the penis.

Transversus perinei alter, rimus, of which the former is connected to the end of the large intestine. See Intestine.

Transum, in Gunner, is a piece of wood which goes across the cheeks of a gun-carriage, or of a gun, to keep them fixed together; each transum in a carriage is strengthened by a bolt of iron. See Carriage.

Transumption, Transumption, in the Schools, a syllagism by concession or agreement, used where a question proposed is transferred to another, with this condition, that the proof of this latter shall be admitted for a proof of the former.

Thus
Thus Aristotle, in his book De Caelo, undertaking to shew, that all the stars are round, transfers the quætion to the moon, and proves her rotundity from her increasing and waning; supposing it a thing admitted by his opponents, that the stars are all alike.

**Transylvania, Principality of**, in Geography, a country of Europe, bounded on the N. by Hungary, Poland, and Moldavia; on the E. by Moldavia; on the S. by Walachia and the bannat of Temeswar; and on the W. by Hungary. The form is nearly oval, about 400 miles in circumference. It is surrounded on all sides by lofty mountains, and is itself mountainous and woody; the mountains run from N. to S., and branch off likewise E. and W., and terminate at the centre, in hills covered with vineyards, and abundant in minerals. The air is generally warm, but more wholesome than that of Hungary; the soil is fertile, abounding in corn; flax of a very good quality, which is manufactured into linen; wine, cattle, and rich pastures: among the minerals are gold, silver, copper, iron, quicksilver, cinabrar, antimoniy, sulphur, vitriol, rock-falt, silt-petre, ochre, &c. The principal quadrupeds are buffaloes, horses, wild affes, elks, bears, wild boars, lynxes, chamois, martens, ermines, and beavers. The inhabitants are composed of different nations: Hungarians, Sikli or Sceythian Huns, Saxons, Walachians, Armenians, Rascians, Bulgarians, and Greeks; to which may be added Jews and Cingars, who live in tents, and lead a vagabond life like gypsies. This country is by the Germans called Siebenbergen, and by the Hungarians Erdely. It was anciently a part of Dacia; and, conquered by Trajan, it became a Roman province. It afterwards fell into the hands of the Goths, Huns, and afterwards the Hungarians. In the year 1004, it was first made a province of Hungary, and continued under the government of a waivode to the year 1526, when two rival princes contended for this principality; one of them was supported by the German emperor, and the other by the Turks; whereupon this country became the seat of war for many years. The princes of the house of Râgotzki were at the head of the Protestant faction, and supported by the Turks, but being at length obliged to quit Transylvania by the Austrians, Râgotzki fled for refuge into Turkey; and at the treaty of Carlowitz in 1669, this country was confirmed to the house of Austria by the Turks. The government of Transylvania is wholly different from that of Hungary; and, by the joint consent of prince and people, formed into an arithocratical government; and, since the year 1722, rendered hereditary to the princes and princeses of the house of Austria. Formerly the prince of Transylvania succeeded to the government by free election, but since the year 1722 by inheritance; and though his power is connected with that of the king of Hungary, and archduke of Austria, yet his government and privileges differ from both. The states of Transylvania, with respect to the number of its nations, are divided into Hungarians, Siculi, and Saxons; with respect to its different religions, into Catholics, Calvinists, and Lutherans; and formerly, also, into Unitarians; but, politically, after the example of Hungary, into prelates, nobility, gentry, and royal towns. The magnates confift of the great officers of state, the counts and barons. The gentry are Hungarians and Siculi, but the royal towns Saxons only. The nobility are generally very proud, and keep their peafantry in a state of slavery; four out of six days in the week the peafant is obliged to labour for his master, having only the remaining two days for himself. The principality of Transylvania is governed in the name of the prince and nobility, by the diet, the office of state, the royal government, the exchequer, the assembly of Hungarian counts, the tribunals of justice, and the magistrates of the Siculi and Saxons. The diets meet by summons from the prince at Hermanstadt. The revenue arises from the contributions, cullions, metals, minerals, rock-falt, royal demefnes, echevets, and confiscations; and are levied by the treasury. This province pays to the emperor in taxes of all kinds 1,500,000 florins annually, which is chiefly imposed upon the land, for the payment of the citizens is very trifing. Transylvania formerly could bring from 80,000 to 90,000 soldiers into the field; but at present the whole force of that principality consists of six regiments, under a commander-in-chief, for the defence of the country.

**Trantery, in some Cystoms**, denotes the money arising by amencements of ale-fellers and victualers for breaking the alhife of bread and ale; particularly at Lufton, and other manors in Herefordhire.

**Traper,** in Geography, a town of Maryland; 7 miles S.E. of Oxford.—Alfo, a town of Maryland; 7 miles S.W. of Salisbury.

**Traper,** in Geology, a class or family of rocks, characterized by the tendency to assume a columnar shape, or to divide into steps forming natural terraces. The name is originally derived from the Swedifh word trappo, a step. It was called by Wallerius corneus trapaezins.

Rocks of the trap family are very extensively spread over the globe, and no quætion in geology has excited greater attention than that respecting the mode of their formation. The near resemblance which many of these rocks bear to compact lava, the remarkable position in which they frequently occur, the regularity of their structure, and the changes which the rocks in their vicinity have evidently undergone, induce many geologists to ascribe to them an igneous origin; other geologists strenuously contend, that all trap-rocks have been originally formed by depositions from an aqueous fluid. Before detailing the facts in favour of these different hypotheses, it will be proper to describe the rocks which are comprised in the trap-formation. The earlier geologists have frequently applied the term trap indefinitely to a great variety of rocks, and the distinction made between trap and the rocks which the French mineralogists have denominated corneâne, is extremely vague.

The roche de corne, so frequently mentioned by Sauvagine, according to Bronniart is a trap-rock in the Wernerian acceptance of the term. Werner, according to Mr. Jameson, restricts the term trap to rocks principally characterized by the presence of hornblende and black iron-clay; yet the same author informs us, in the following paragraph, that in the oldest or primitive trap, no iron-clay whatever occurs. Jameson’s Mineralogy, vol. ii. p. 129.

The presence of hornblende and feldspar, or augite and feldspar, would have formed a more accurate and comprehensive definition of the constituents of trap-rocks, or of those rocks which are comprised by Werner in the trap-formation.

M. le Cordier, in an interesting memoir presented to the National Institute in 1815, alters that in the trap-rocks which are supposed to be of igneous origin, and in volcanic rocks, hornblende is extremely rare, but its place is supplied by augite, which has been mistaken for hornblende. The constituent parts of these two minerals are the same, and the proportions in which they combine do not greatly vary, so that considerable doubt has existed whether they should not be classed as the same species, notwith-
TRAP.

notwithstanding the difference of their crystallization. Be
this as it may; we consider it to be a question yet undecided,
whether augite (pyroxene of Häüy) is confined to rocks of
undoubted igneous origin, though Cordier, in the memoir
before alluded to, has proved that this mineral is a con-
taminant part of a considerable number of lavas, and of many
rocks denominated trap; and we know that this opinion is
further confirmed by the extensive observations of that emi-
tinent geologist Von Buch.
The classification of trap-rocks adopted by Werner having
been extensively admitted, we shall endeavour to state it as
concisely as is consistent with peripatetic. He divides trap-
rocks into three formations: primitive trap, transition trap,
and the new flëzzx trap.

Primitive trap is almost always distinguished by a great
predominance of hornblende, so that some of these rocks are
entirely composed of this mineral, or nearly so. There are
three principal species of primitive trap; common hornblende-
rock, hornblende mixed with felspar, and hornblende mixed
with mica.

Common hornblende-rock is principally composed of
hornblende; it contains two subordinate kinds, granular
hornblende-rock and hornblende-flate; the latter differs
from the frite in having a flaty structure. Hornblende-
flate pass sometimes into gnéifs, and sometimes into talcose
flate. (See GEITSS, and TALCOSI Flates.) These two
kinds of hornblende-rock occur in gnéifs and mica-flate,
forming beds which are but few in number, and of incom-
considerable magnitude; but in clay-flate they occur fre-
quently, and in very thick beds.

Hornblende mixed with felspar. This species Werner
divides into two subordinate kinds; greenstone and green-
stone-flate. The term greenstone (grünstein, German) is
used by Werner to denote a rock composed of crys-
tals of felspar and hornblende, and nearly resembling fiente (see SiENITE); but in greenstone the hornblende generally
predominates, and the felspar is commonly white, whereas
in fiente it is red. When the greenstone includes large
crystals of felspar, it is denominated porphyritic greenstone.
When the granular basis is very fine, it is called greenstone
porphyry. According to Mr. Jameson, this is the black
porphyry of the ancients. When the granular nature of the
base is no longer visible to the naked eye, it has a blackish
green colour, and includes crystals of compact felspar. It
is the porphyre verre, or antique green porphyry of sculptors.

Greenstone-flate is composed of hornblende and compact
felspar, and has a distinct flaty structure. The felspar is gen-
erally more abundant than the hornblende, and it some-
times contains scales of mica. It occurs in great beds and
masses in clay-flate.

Hornblende mixed with mica is the third species of pri-
mitive trap; it is composed of an intimate mixture of
hornblende and felspar, and includes scales of mica. It oc-
vol. iii.

Transition trap is divided into transition greenstone and
transition amygdaloid; but it does not appear that these
rocks have any very distinct character to distinguish them
from the greenstone and amygdaloid of the other trap-for-
maions. According to Mr. Jameson, transition greenstone is
a fine granular mixture of hornblende and felspar; but some
of the primitive and flëzzx greenstones are also described by
the same geologist as being finely granular. Transition
amygdaloid is slated to have a base of wacke, (see WACKE),
and approaches more or less to the nature of greenstone,
sometimes inclining to bafalt, and sometimes to iron-clay.

The vehicles are filled with clay, or with chalcedony and
agate: it alternates with transition lime-flate.
The new flëzzx trap-rocks of Werner comprise green-
stone, bafalt, wacke, porphyry-flate or clink-flone porphyry,
trap-fluff, greyflone, amygdaloid, with compact felspar and
clay-flone. He also includes pearl-flone, pitch-flone, obsidian,
and pumice in this formation of trap. (See the various ar-
ticles here enumerated.) It is these rocks, which Werner
calls the new flëzzx trap, that present the strongest indica-
tions of their igneous origin; and some of the substances
here enumerated, such as obsidian and pumice, are now gen-
erally classed with volcanic products.

Some geologists are of opinion, that there is no foundation
in nature for the division of trap-rocks into three distinct
formations, introduced by Werner.

There are, however, certain peculiarities of position, which
seem to indicate a difference in the mode of formation
between the trap-rocks that occur imbedded in other rocks,
and those which cover the secondary strata. To form a
more distinct idea of this, we must refer to the general
structure of the surface of the globe. The beds of rock
which form the crust of the globe, are commonly arranged
over each other in what is denominated a conformable po-
tion, as represented Plate II. Geology, fig. 6, where G is
the foundation, or lowest rock, on which the different beds a, b, c,
d and d are laid, and may be supposed to cover the mountain
with a general conformity to the shape of the lower rock.
This is more distinctly seen in the same plate (fig. 3.), where
the upper beds have the same elevations, depressions, and
undulations as those of the lower. The other position in
which rocks occur, is called unconformable. “If a thick
stream of lava, as frequently happens, were to flow over a
range of conformable rocks, filling up the cavities and
inqualities of the surface, when it hardens by cooling, it
would form a bed of superimposed unconformable rock.
Such infusions are common in volcanic countries. Very
extensive ranges of rocks occur in this position in various
parts of the world, covering not only the primary, but the
secondary rocks. These unconformable rocks, composed of
different kinds of trap, porphyry, and fiente, frequently
assume the columnar structure, and form vast ranges of
natural pillars, as at Staffa and many of the Hebrides, on
the northern coast of Ireland, and in Iceland, Sicily, and
various volcanic countries. Now whatever theory we adopt
respecting the formation of unconformable rocks in this
position, we must admit that they are of more recent origin
than the rocks which they cover; the lower rocks must have
been hard and unyielding, when the upper were thrown
upon them.” Bakewell’s Introduction to Geology.
The unconformable position of bafaltic rocks, or rocks of
the trap-formation, is represented Plate IV. Geology, fig. 2
a, a, a, a, being a series of regularly stratified rocks, covered
by a mass of unconformable bafalt, b b. The trap in this
position is often divided into distinct beds, some of which
are columnar, as represented at e e, and these columnar beds
are frequently separated by beds of compact trap.

Masses of trap also occur, forming perpendicular walls
(called dykes in the northern part of England): these in-
tersect the strata and frequently change their position, as
represented Plate II. Geology, fig. 8. Where a series of
strata a, b, c, d, e, f, g, which were once continuous,
are broken by a dyke of bafalt. The familiar letters on each
side of the dyke represent the same stratum, as d d, e e, broken
by the intervention of the bafalt. In such instances, the
strata in the immediate vicinity of the bafalt have under-
gone a considerable degree of change; and where the
stratum e e is coal, it is frequently found converted into
coak,
coak, or charred for some distance on each side of the basalt. These walls or dykes of trap are sometimes twenty, thirty, or even a hundred yards or more in thickness, and sometimes range along through very extensive districts; indeed there is reason to believe that many mountains of trap which are arranged in one line along a country, have been originally dykes of enormous magnitude, through which vales have been excavated by diluvial currents, by partial subsidence, and by other agents which have in former ages changed the surface of our present continents. See Veins, Mineral.

Independently of theoretical opinions respecting the formation of trap-rocks, it is obvious that the masses of un-conformable overlying trap, and also the trap or whin-lime in dyke, must be of posterior date to the rocks which they cover or underlie; whereas the hornblende-rock or primitive trap which is imbedded in gneiss, mica-flake, or clay-flake, must be coeval with the rocks in which it occurs; and the same is equally obvious with respect to trap-rocks alternating with secondary strata. Trap or basalt sometimes occurs in globular masses composed of concentric spheres, or of prisms of basalt in a radiated diverging form. The spheroidal basalt with concentric layers, frequently includes in its centre a mass of basalt similar to that which envelops it; but sometimes the central maf is of a harder kind, or is a fragment of some other rock, as of shelly lime-lime. Many trap-rocks, in decomposing, present a spheroidal structure which was not before visible in the maf; and it is observed, that the balls of basalt which fall out or remain when the rock is decomposed, are harder than the main body of the rock. This is the case with the basalt at Rowley in Staffordshire, called Rowley Rag. See Rowley Rag.

The spheroidal structure is however not peculiar to basaltic rocks. Rocks of granite, in decomposing, sometimes present globular masses of harder granite imbedded in the maf.

In columnar trap we find the columns of all sizes, from a few inches to two hundred and fifty feet in length. The form of the prifm or column is also various, and more or less regular, having generally three, four, or five sides: the latter or pentagonal form is the most common. The diameter of the larger columns is frequently four or five feet, or more, and sometimes is nearly equal to the height.

Rocks of the trap-formation are also frequently observed to form conical mountains, or to occur as detached masses on caps on the summits of other hills, and to occur at nearly the same level as represented Plate IV. Geology, fig. 3. c, d, and e. In such instances, it seems probable that the different caps have originally formed parts of one continuous bed, which has been broken either by the excavation of currents, by subsidence of the intermediate parts, or by the elevation of the hills from their primeval position.

The columnar structure and the overlying position so remarkable in trap-rocks, are also common to some kinds of porphyry, and to syenite, which are not included by geologists among trap-rocks, but to which they bear a near affinity. To take a just and enlarged view of this class of rocks, we must leave the minute subdivisions and classifications of cabinet philosophers, and contemplate the natural relations which these rocks have to each other, and the gradations which may be traced between mountain mafes pafsing great difference in their external appearance. Hornblende or augite forms an essential part of almost all trap-rocks, as well as rocks of undoubted volcanic origin. Now these minerals, though classified by mineralogists as two distinct species, are so nearly alike in their constituent parts, that we may consider them as identical, when they existed in a fluid state in the matter of the rocks of which they form a part. Circumstances of minor import may easily be conceived to have changed the form of their crystals, as we know by experiment the slight causes which occasion varieties of form in the crystallization of the same constituent ingredients in our laboratories. The constituents of hornblende and of augite, are felsy, alumine, lime, magnesia, iron, manganese, and a trace of potash: the proportions of each, which exist in the two minerals, do not vary more than the proportions which exist in substances clafied by Haüy with hornblende, or between varieties of the same species in many other minerals.

We may regard then, in a geological view, the constituents of hornblende and augite as forming the same mineral, under whatever crystalline forms they may present themselves in rocks. It is this substance which forms the connecting link between granite, trap-rocks, and lava. Hornblende enters as a constituent part into many rocks of granite. According to Patric, mafes and veins of granite occur in hornblende-rocks, and mafes and veins of hornblende in granite-rocks, in the Alpina mountains. Hornblende is found in some of the granites of the Higher Alps: it exists abundantly in most rocks of gneiss, which is only a laminated granite. When the hornblende in granite increases in quantity, so as to form a considerable part of the maf, the rock is denominated syenite. When the hornblende gives its colour to the rock, it forms greenstone. When the parts are more intimately mixed, it becomes a compact trap or basalt; and basalt and compact lava bear in many instances so near a resemblance, as not to be distinguished. According to the account of Sir George Mackenzie, beds and even columns of basalt frequently occur in Iceland, the lower parts of which are a porous and vitreous lava or flag. The close resemblance between the compact lavas, and the columnar basalt in the vicinity of Etna, and other active volcanoes, is so great, that we believe it is extremely difficult, if not impossible, to distinguish them from each other by any well-defined characters. The currents of lava which have recently flowed, differ indeed from beds of basalt or trap by their porosity; but Cordier has well observed, in the memoir before alluded to, that it is only the superficial part of modern currents of lava that are exposed to our observation; and to judge of their real nature from the external features, would be like judging of the contents of a vat of wine, from the froth floating on its surface. The ancient currents of lava are some of them of immense fize, and have frequently been excavated or broken, by which the internal parts are discovered, and these, as before remarked, bear a near resemblance to many of the regular rock-formation, and particularly to varieties of trap-rock.

Such being the leading characters in the composition, structure, and position of trap-rocks, we need not be surprised that the earlier geologists were disposed to class them all with volcanic products, and to asssert that they had been formed by eruptions from ancient volcanoes, in a manner similar to the formation of modern currents of lava. This hypothesis, advanced before many phenomena attending volcanic eruptions were known, and when the effects of heat combined with pressure had not been investigated, was exposed to many weighty objections. Another theory, which ascribed the formation of trap-rocks to aqueous depositions, was warmly supported by many geologists on the continent, and particularly by M. Werner. He supposes, that after all the primitive and conformable rocks had been deposited, the primeval waters which covered the highest mountains sunk slowly to their present level.
TRAP.

From some unknown cause, a sudden rising of the water took place in a turbid and agitated state, and covered the whole globe: it then became calm, and during the period of its settling, deposited the different rocks of overlying trap, and again retired to its former level with considerable rapidity. The broken stratification, so characteristic of this formation, was caused partly by the rapid retreating of the water. The heaps of trees, the beds of clay, sand, and gravel, and their confluent occurrence in the lower parts of this formation, are evident proofs (says Mr. Janson) of the rapid and tumultuous rising of the water. The subaqueous calcareous of the water is proved by the fineness of the mechanical and the increasing fineness of the chemical solutions, as we approach the upper part of the formation. Janson's Mineralogy, vol. iii. p. 85.

According to this theory, the regular ranges of columns so frequent in trap-rocks, were produced by the shrinking in or drying of the mafs. As the inundation was general, the rocks of this family must be spread universally over the globe. Indeed the fame geologist supposes there were two inundations, the first, which deposited the overlying porphyry and fientite, the second, which deposited the basaltic or flow trap-rocks. On this theory, Mr. Bakewell remarks in his Introduction to Geology, "it is scarcely possible for the human mind to invent a system more repugnant to existing facts. Were basaltic rocks, as Werner supposes, deposited from an aqueous fluid, that covered the whole globe after the formation of the secondary strata, every part of the dry land and every valley must have been incrusted or filled with basalt; it would be the prevailing rock of every district: on the contrary, overlying trap or basalt exults only in detached mafs, in particular situations, nor do fragments of basalt occur in any quantity sufficient to warrant the belief that it was ever formed universally over the globe."

Though the mode of aqueous formation, suggested by Werner, is utterly inadmissible, we do not think it improbable that many basaltic rocks may have been formed in the humid way, by eruptions of mud of limited extent, like those which fluce at present from the volcanoes in South America. The opinion that all basalt or trap-rocks have originally flowed in the form of lavas, we do not seem authorized, from existing facts, to maintain; and the great latitude given to this mode of formation, has induced other geologists to reject it altogether. But it has been well observed, that there is a wide difference between ascertaining the agency by which a rock has been formed, and the manner in which that agent has been applied. Numerous observations, which have been recently made on trap-rocks in volcanic countries, have led to the opinion that many of these rocks have been softend, and even fused, in their original position, without ever having flowed as currents of lava.

The principal objections against the agency of fire in the formation of these rocks are enumerated by Brochant. (Min. tom. ii.) Many of these objections, we think, can be satisfactorily answered.

1. "Basalts are extremely rare among the products of burning volcanoes, and modern eruptions have not produced any."—This objection is founded on an assumption of facts, which are not admitted by other geologists. The observations of Daubuisson in Auvergne, of Sir George Mackenzie in Iceland and the Færoe islands, and of Humboldt in South America, prove that trap-rocks are extensively spread among volcanic products; though, in many instances, they appear to have been formed by the agency of subterranean heat acting on beds of schist, which have been melted or softened in their original position, and been subsequently elevated, without ever having flowed as lava. If modern eruptions have produced no basalt, we may collect that it is only the external parts or fociis that are exposed to our view; and we have no opportunity of examining the currents of submolar lavas, formed at great depths under the ocean, in circumstances similar to those which may have attended the formation of basalts. That many basaltic rocks were formed under the sea, is evident from their alternating with beds of lime-stone containing marine shells.

2. "Whatever origin may be attributed to the columnar or tabular structure of basalt, it is not peculiar to trap-rocks; there are gypseums, marls, and sand-stones, which frequently form this structure."—The columnar and globular structure may be formed by the slow refrigeration of a melted mass of basalt, as was proved in the experiments of Mr. Gregory Watt. (See Rowe? Rag.) The columnar structure has been observed by Colonel Imrie in a current of lava which had flowed from a volcano in Feli-cuda, one of the Lipari islands. This current could be traced from the mouth of the volcano to the sea. That the columnar structure may also exist in some rocks of aqueous origin, cannot invalidate the above facts. The particular forms which the columns of basalt sometimes present, which will be subsequtently noticed, appear to be the effects of partial fusion.

3. "Basalts often repose immediately on coal, as at Melfiner, near Caffel. Now, if this basalt were volcanic, it must necessarily have produced the combustion of the beds of coal."—To this objection it will be sufficient to reply, that numerous instances may be cited of basaltic dykes and beds of basalt having charred the coal in their vicinity, and reduced it to a flate of coke or cinder. (See Veins, Mineral.) And from the experiments of Dr. Maccullock on powdered jet and wood-coal, inclosed in gun-barrels under pressure, so as to confine a considerable part of the volatile products, it appears that they were converted into true mineral coal by a red heat; and had the confinence, fracture, and every property of pit-coal. Where basalt in contact with coal has reduced it to a coke, it appears highly probable that the volatile parts have been driven off by heat; and where the coal prefers its true character, the volatile parts have been retained by compresion.

4. "The remains of animals and vegetables which are found in some trap-rocks, could not have filled the action of volcanic heat without being destroyed. It is the fame with many very fusible minerals. Some such fusible minerals are also found in volcanic rocks; but these infusions are rare, and cannot serve as a basis for a general rule."—In the experiments of Sir James Hall on lime-stone exposed to heat under compresion, it was found that chalk, which contained shells, might be melted and reduced to a crystalline flate by cooling, without destroying the organic structure of the shells. Most of the organic remains in basaltic rocks are in a softer amygdaloid, or in wacke, which may probably have been formed from eruptions of volcanic mud, like that called naya, from the South American volcanoes. The fusible minerals found in basalt and some volcanic products, there is every reason to believe, assumed a distinct crystalline form when the mafs was conglobating.

5. "Cavities filled with water in secondary trap-mountains, oppose the supposition of their igneous origin."—That these cavities have been filled by infiltration is rendered almost certain, from the circumstance that the water may be expelled by a gentle heat; and if the water can find a passage through the stone from the cavity to the surface, it may also find a passage from the surface to the centre of the mafs.

U 2

6. "There
6. "There are not observed in trap-rocks either that black colour, or those indications of vitrification, that are apparent at least in certain portions of the products of burning volcanoes: real craters have never been observed. All those which have been cited were hollows, chafms filled with water, so common in some mountains."—This is an assumption of facts which recent observations disprove. The basalt in the Ferro islands, and in Iceland, have, in some instances, the black appearance which is here denied: the columns and beds of basalt contain also in their lower, and sometimes in their upper parts, ferorie, and those indications of vitrification that are apparent in burning volcanoes; and the sides of the basaltic dykes are generally vitrified. That many of the hollows, supposed to have been craters, were hollows formed by defruption, is probable; but what other appearance could the crater of an ancient volcano be expected to present, than a hollow or chasm which might be filled with water?

7. "Mandeltine (or porous amygdaloid) has certainly some resemblance to porous lava; but there are mandeltines evidently not volcanic. Besides, the cavities in the mandeltines of trap-mountains contain very different minerals, and such as could not have undergone the action of fire, without being changed."—The remarks made previously on very fusible minerals inclosed in basalts, and some lava, apply equally to this objection. It is also probable that soft and amygdaloidal basalts may have been formed from eruptions of mud, as before stated.

8. "Although from experiments made on basalts and lava, and from observations made on burning volcanoes, it is known that fomy substances may, after perfect fusion, resume their fomy character; but when this takes place in burning volcanoes, there are always found in the vicinity substances which are fcorified or vitrified, and denote the action of fire."—It has before been remarked, that fcorie and vitrified substances occur in the basalts of Iceland and Ferro; they accompany the basalts in Auvergne, and the vicinity of Etta. In almost all basaltic countries, some of the rocks present so striking a similarity to volcanic products, that the resemblance has often struck the most common observer. If other basaltic rocks do not present the same appearances, it may be owing to their having been formed by submarine eruptions, under circumstances very different from those which take place on land; and it is not contended that all basalts have originally flowed as lava.

9. "In various countries, beds of basalt are observed to alternate with sandstone and stratified lime-stone."—It is observed in many parts of England and Scotland, and is probably general, that where beds of trap are interposed between sandstone or lime-stone, they are generally very irregular both with respect to thickness and extent, and have seldom the same uniform arrangement as the stratified rocks with which they alternate. That the lime-stone was formed under the sea, is proved by its containing marine shells: and there is no improbability in the supposition, that currents of submarine lava may have flowed at different periods over beds of shells or sand, and converted the one into lime-stone and the other into sandstone.

10. "In many basaltic districts, basalt is only found on the summits of hills; and it is evidently perceptible, by the correspondence of the beds, that all these summits were parts of one and the same bed, which spread over all the district. This is not the form of volcanic deposits: they take a certain direction, and no similar instances of such vast volcanic deposits are known."—The frequent occurrence of detached caps of basalt forming the summits of hills, in an extensive district at nearly the same level, constitutes one of the most remarkable peculiarities of the trap or basaltic formation, and defers particular attention, as marking some of the latest revolutions that have changed the surface of the globe. To form a more distinct idea of the situation of these caps, we refer to Plate IV. Geology, fig, 3, where a mass of unconformable trap, a, lies upon the stratified rocks, and may be seen on the summits of other stratified hills at b, d and c. In some instances, as in the Isle of Skye, as described by Dr. Macculloch (Geological Transactions, vol. iii.), the mass at a appears to be connected with the lower rock, and to form a part of it, as if it had broken through the strata, and been thrown over the surface in a flat or fusion. The strata consist of grey lime-stone containing shells; but where the lime-stone is in the vicinity of the trap, it is converted into white crystalline flinty marble. A similar change is produced on chalk, or earthy lime-stone, when subjected to heat under pressure, as was proved in a series of experiments made by Sir James Hall; and as we are unacquainted with any other cause which could produce this change, it appears probable that the lime-stone has been converted into marble by subterranean heat, and that the trap has flowed over the surface like lava, but under the pressure of the ocean; the existence of marine shells in the lime-stone proving that such must have been its original situation. The cafes which have changed the relative level of the lime-stone, with respect to the sea, may have broken the continuity of the strata, and of the basalt which lies upon them. The basaltic mountains of Auvergne, in the departments of Puy-de-Dôme and Cantal, in France, have excited much attention from the existence of ancient volcanic craters in their vicinity. According to Daubrun, the fundamental rock of that district is granite, covered in some places with a marly lime-stone. Nearly all the foil is covered with volcanic or igneous productions; they are of three kinds, and appear to have been formed at three distinct epochs. The most recent are currents of lava, which lead to craters still extant, though dormant. The second formation consists of masses or tables of basalt, separated by openings or valleys. The third consists of mountains composed of a kind of volcanic porphyry. The currents of lava are observed to have run from the bottom of a number of conical hills, from two hundred to four hundred yards in height. These hills, of which there are about one hundred, are formed of heaps of scoriaceous fragments of lava, and papillo or tufa. Their summit often presents a hollow in the form of a crater: they rest immediately upon granite. The lava at the bottom is of a basaltic nature: it is of a greyish-black colour, with a fine compact grain; it contains grains of augite, olivine, and felspar. The superfiacies is blistered and fluided with aperities, which sometimes exceed a yard in height. The interior is more compact. The currents are spread in the adjacent plain; they have sometimes reached the bottom of certain valleys, and have followed their course for three or four leagues. In advancing progressively, they always defected to lower elevations; they follow the inequalities of the soil; and separate on meeting with any obstrucing eminences in their path. The history of these currents of lava, says M. Daubrun, is complete, and there is nothing left for the imagination to supply. We behold the orifice from whence they issued, the course they pursued, and the country they occupy. As for the period when these lavas flowed, though anterior to the history of man, it is nevertheless recent, compared with those vast changes which the surface of the globe presents, and was posterior to the excavation of the valleys, since it flowed through them, and occupied their bottoms.
TRAP.

The igneous productions of the second kind are basalts, which in the form of beds, tabular masses, or peaks, cover the elevated parts of the ancient surface of the country, or occur on the summits of some mountains and isolated eminences. They are also observed on the flanks round the sides of Mont Dor and Cantal. They are, says M. Daubuisson, evidently only the remains and patches of different currents which have spread over the country; they present the same mineralogical characters as the basalts of Saxony, and other districts; they contain the same fusions, and have the same tendency to form regular prisms or columns; they cover, without distinction, all kinds of rocks, and are never covered by them. An igneous origin cannot be denied to these basalts; the perfect resemblance between their pacts and that of some of the currents of lava in their vicinity, which can be traced to existing craters, affords a strong presumption of this; but they present other invariable marks of their origin. In following step by step certain masses of basalt, which are near Mont Dor and Cantal, and supplying by imagination what has been taken away, where their continuity is broken, you arrive at the sides of these two enormous volcanic mountains, and we come to masses of felspar or of bifurcated rocks, where beyond doubt we are near the current: all the basalts which have been traced upwards made part of that current. A great number of these large basaltic platforms, which cover isolated mountains, display on their surface blisters, fongy felspar or droplets, like those which cover the belt preferred lavas; nor can we refute them a similar origin. Some of these platforms repose on volcanic ashes. It is true, some isolated eminences have summits of compact prismatic basalt of a black colour, and definite of those unequivocal signs of the action of fire which are seen elsewhere; but these eminences of compact basalt most frequently find by the side of those platforms with scoriaceous surfaces, before deferebrated: they once formed with them a continued whole, and have evidently been divided from them by the excavation of the ravines and valleys which now separate them. They cannot have had a different origin. The convulsive action of time and the elements must have destroyed the scoriaceous crust; only the compact nucleus remains, deprived of the marks of the action of fire, like the interior parts of most currents of lava, which are equally deficient of such marks. Thus, says M. Daubuisson, all the basalts of Auvergne present proofs either direct or indirect of an igneous origin; though the disintegration of the surface, and the hardening that the currents have suffered, prevent us from retracing them to the crater from whence they flowed, and from seeing the number, form, and extent of the different currents; but we are certain that their existence was anterior to the excavation of the valleys.

The porphyroidal trap is the third kind of igneous rock-formation in Auvergne. It forms eight or ten distinctly mountains: the most considerable are Mont Dor, Cantal, and Puy-de-Dôme. The habit of these mountains, from the account of Daubuisson, appears to be a kind of felspar or clinilite porphyry: their pacts, direct or indirect, into basalt, and, above all, the volcanic felspar imbedded in their mafs, prove that they owe their existence to fire. These porphyries are the most ancient of the igneous productions of Auvergne; they are covered with basalt, and contain veins of that substance.

In the opinion of some geologists, these mountains and masses of porphyry have never flowed as lava, but have been fished in their native beds, and subsequently elevated. The homogeneity of their pacts shews how complete the fusion has been. The crystals of felspar were, in all probability, formed during the igneous fluidity of the mafs. However different the currents of lava, the basalt, and the porphyryic trap may be, and however various the periods of their formation, they appear, says M. Daubuisson, to be united in a certain degree. Cantal, Mont Dor, Puy-de-Dôme, and the other porphyry mountains, are ranged in a direct line running nearly from north to south. Almost all the basalts of these regions, that can be, in some manner, retraced to their origin, seem to have taken their direction in the same line. It is also in this direction, and among the ancient products, that the greater part of the craters have been opened whose vestiges are still visible. When, at two leagues to the westward of Clermont, we see near sixty volcanic mountains ranged in a straight line, it can scarcely be believed to be the effect of chance. A cause has certainly existed, which has produced this effect. Perhaps, says Daubuisson, there was in this direction a vein of matter that contained the germ of volcanic fire, which burst forth and was renewed at different periods.

Perhaps this range of mountains may be regarded as an enormous basaltic dyke, which has broken through the crust of the globe along the line where they are now ranged, their continuity having been broken by partial subsidence, and by diluvial currents. Daubuisson's account of the trap-rocks or basalt of Auvergne is particularly interesting, as establishing the intimate connection between trap-rocks and those of undoubted igneous origin. It is further remarkable, as M. Daubuisson had previously published an account of the basalts of Saxony, in which he endeavoured to prove the aqueous formation of basaltic rocks.

The most remarkable trap-formation in Europe, and perhaps in the world, extends from the county of Antrim, in Ireland, through part of the Scotch Hebrides, and is probably the fame which occurs in the Faroe islands, and the island of Iceland. An account of the columnar basalt of this formation will be found under the articles Giant's Causeway, and Staffa. The geological relations of the trap-rocks of Antrim with the regular strata in that country, have been recently traced by the Rev. J. Connibear and Dr. Berger. The basalt of this district generally covers chalk, similar to the chalk on the eastern side of England, and like it resting upon beds of sand, and the grey frutified lime-stone called lias. In England we have no instance of basalt occurring above the chalk, or any of the strata over the lias, or in the lias itself, though it occurs in the coal-formation under the lias. A fine fection of the beds of basalt with the chalk, sand-stone, lias, and coal-strata, may be seen for many miles along the coast, presenting numerous dykes and fractures of the strata, which have sometimes brought the basalt to the fame level with the chalk, and in other situations with the coal-strata. The basalt in the interior, and in some parts of the coast, forms isolated caps on the summits of detached conical hills. The existence of these isolated caps has been attributed to diluvial currents, which have cut through the once continuous beds of basalt. Though such currents have doubtless existed in various situations, and have excavated valleys, another agent has obviously been employed in the formation of the valleys of Antrim. We have only to examine the coast to convince ourselves of this fact, where we may see the strata suddenly thrown down or elevated several hundred feet, by mineral veins or dykes filled with basalt. If we trace in imagination the fame displacement into the interior, where it obviously extends, we shall see a sufficient cause for the existence of isolated caps or beds of basalt, separated from each other by valleys, or lower grounds, that have been formed by subsidence. Through these veins or dykes the basalt itself was probably
probably thrown up, and splayed over the surface in a fluid state. Wherever these dykes pass through the chalk, they have converted it into crystalline lime-stone to a certain distance on each side, and produced various appearances, which tend further to prove that the matter of the basalt has been in a state of igneous fusion. See Vikes, Mineral.

That the basalt has been forced through the chalk and the other strata on which it now rests, is rendered almost certain, by the occurrence of broken strata of chalk enveloped in the basalt, and contorted in a manner which proves the violence of the dislocation, the upheaving of the basalt, and the lateral pressure to which the chalk-strata have been subjected. See Plate IV. Geology, fig. 4.

One remarkable feature in the arrangement of the basaltic columns in Antrim must not be overlooked. The great ranges of columns are nearly vertical, but the columns of basalt in the mineral dykes are arranged horizontally. This difference of position may admit of a probable solution, if we allow that the basalt, in both instances, had been in a state of igneous fusion. The beds of columnar basalt being thrown over the surface of the ground that formed the bed of the ocean, would begin to refrigerate at the upper and under side in a vertical direction. On the contrary, in mineral dykes intersecting rocks already formed, the basalt would suffer refrigeration most rapidly where it was in contact with them, which would be on the fides, and this refrigeration would gradually extend to the interior, in a horizontal direction: and to this difference in the mode of their consolidation, we may ascribe the horizontal or vertical position of the columns in the beds and dykes of basalt. For an account of the experiments of M. G. Watt and Sir James Hall on the fusion of basalt and lava, see Rowley Rag, and Volcano.

Trap-Hole, in Rural Economy, a term applied to a round hole, which is cut out and prepared in the floors of the flowage-rooms, where hobs are deposited after being dried, for the purpose and convenience of bagging them. It is formed exactly equal in size to the mouth or opening of the bag, around which a wooden frame is securely placed and fixed, to the edge of which, the border of the mouth of the bag is firmly attached all round. By this means the hobs are readily forced into the bags in a close compact manner.

The term is also occasionally applied to other holes cut and formed in the floors of farm-buildings.

Traps, Gardens, such as are contrived for the purpose of destroying mice and other vermin; which are often conveyed into such places with the flax, litter, and other materials that are made use of in them; and which are extremely hurtful and troublesome in the spring season, in destroying peas and beans, as well as lettuce, melons, and cucumbers in frames.

Traps for this purpose are contrived in a great many ways; but as field vermin are very shy, and will rarely enter traps which are close, the following simple cheap form has been advised by Mr. Forth, though it has nothing of novelty in it. These traps may be made by fringing garden-beans on a piece of fine pack-thread, in the manner of beads, and then driving two small flake-like pieces of wood into the ground at the breadth of a brick from each other, and setting up a brick, flat stone, or board with a weight on it, inclining to an angle of about forty-five degrees; tying the flaring, with the beans on it, round the brick or other substances and flakes, to support them in their inclining position, being careful to place all the beans on the under sides of the bricks or other matters. The mice in eating the beans, in such cafes, will also destroy the pack-thread, and by such means diluge the brick or other weighty body, which by falling on them readily destroys them.

Mice are always the first got rid of by some sort of simple open traps of this nature.

TRAPA, in Botany, a Linnean name, whose idea is certainly taken from the warlike instrument called Caltrop, the Tribulus of the ancients, which consisted of four iron radiating spikes, so placed that one of them must always stand upwards, in order to wound the feet of passengers. Such is the figure of the singular fruit of this genus, hence named by Tournefort Tribuloides. Callicarpa, an old botanical word of similar meaning to Tribulus, is compounded perhaps of calco, to tread, or kick, and Tribu, to turn, because the Caltrops are continually kicked over if they fail of their intended mischief. Here we have the immediate origin of Trapa.—Linn. Gen. 62. Schreb. 84. Willd. Sp. Pl. v. t. 681. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. t. 267. Sm. Prodr. Fl. Grac. Sibth. v. t. 104. Juss. 95. Lamarck Illust. t. 75. Genrtn. t. 26. and 95. (Tribuloides; Tourn. t. 431.)—Clasf and order, Tetrandria Monogynia. Nat. Ord. Inundata, Linn.? Hydrocharidce. Juss. or rather, as that author himself indicates, his Onagre.

Gen. Ch. Cal. Perianth superior, of four acute, equal, permanent leaves, firmly united to the sides of the germ. Cor. Petals four, obovate, larger than the calyx. Stam. Filaments four, the length of the calyx; anthers simple. Fift. Germin turbinate, crowned by the calyx, of two cells; style fimbie, as long as the calyx; stigma capitate, emarginate. Peric. none. Seed. Nut turbinate, more or less compressed, of one cell, armed with two or four horn-like protuberances, originating in the persistent calyx, thickened, either spiny or blunt. Kernel foliary.

Eff. Ch. Corolla of four petals. Calyx of four leaves. Nut armed with two or four opposite horns, originating in the leaves of the calyx.

1. T. natans. European Water-caltrops. Linn. Sp. Pl. 175. Suppl. 128. Willd. n. t. Ait. n. t. Prodr. Fl. Grac. n. t. Genrtn. t. 26. (T. aquaticus; Camer. Epit. 715. Matth. Valgr. v. 2. 324. Ger. Em. 324.)—Nuts with four spiny ascending horns.—Native of ponds and muddy ditches in the south of Europe, flowering in summer. The plant is annual, and has several times been brought into England; but whether its seeds are not perfected here, or from any other cause, it has never yet been naturalized. The plants at Verfaiabes abound with this Trapca. The foliary fimbie roots send up a long, cylindrical, floating flarn, varying in length according to the depth of the water, furnished with numerous, oppositely, pectinated tufts of fibrous radicles, gradually diminishing to simple fibres, and at the top of the flem, which is thickened, these fibres are replaced by alternate flattened leaves, which are crowded at the summit into a large spreading flarn, floating on the surface of the pool, and often ten or twelve inches in diameter. Each leaf is rhomboid, fusculent, an inch or more in breadth, vein; strongly toothed in front; entire at the base; the veins rather hairy underneath. Footstalks three or four times as long as the leaves, smooth, swelling beyond the middle into an elliptical cellular body, rendering the plant more buoyant. Flowers small, white, on short, club-shaped, axillary, simple, partly hairy stalks, scarcely half an inch long. Nuts turbinate, about an inch in diameter, angular, smooth, with four, by accident only two or three, prominent ascending pointed horns, becoming lateral by the increase of the summit of the germen, two of them situated at the angles of the nut, two lower down at the sides. The kernel is edible, somewhat like a chestnut. This plant is doubtless the Bryophyta natans of Dioscorides, found by Mr. Sibthorp in countries bordering
on the north of Greece, though not in that country itself, nor the neighbouring islands. The wooden cut of Camerarius, executed, we believe, under Conrad Gessner's inspection, is one of the best representations of any known plant. — Linnaeus mildook the radicles for submerfed foliage, like that of Myriophyllum.

2. T. bicoloris. Chinefe Water-caltrops. Linn. Suppl. 128. Willd. n. 2. Alt. n. 2. Gertr. t. 95. Olbeck's Voyage, Engl. ed. v. 1. 305. (Bucephalon; Burm. in Plunt. Ic. 55. t. 57. at the bottom. Linkaia, Lang-kamm, or Leng-kla, of the Chinefe.) — Nuts compressed, with two oppo- difed defexed horns. — Native of ponds in China. Some of its nuts were procured by fr. Joseph Banks, in bottles of water, from China. These being immersed in mud at the bottom of some tubs of water at Kew, as well as in Mr. Lodges' flove at Hackney, vegefated, and produced plants hardly diftinguishable, in any refept, from the foregoing, of which we obtained fpeimens, from the fifters at Kew, in October 1790. These had the shell of the parent nut at their root, fo that no deception could take place. This nut is very different from the former, being twice as large, much compressed, with two large, diverficated, recurved, oppofite horns, more or lefs pointed, which could hardly be fuppoled to have originated from the calyx. We know nothing of the flowers of this species, nor are we perfuaded of its exiftence at prezent in the English gardens. Mr. Aiton indeed marks it as a perennial greenhouse plant, but not as having flowered; and we perfume, with deference to his well-known accuracy, that it perfumed as an annual, without flowing, we having never heard of it since the feafon. One of our fpeimens has feveral ftons from a fingle root, which may pofibly be the cafe with $T$. natans occafionally. Gard- ter's figure is different from Burmann's, and from our Kew fpeimens, in the bluntefs of its horns. We have a fpecimen like it, from China or the East Indies, and are not without a fufpicion that it may belong to a third species, whose herbage is, as yet, unknown to botanifs.

TRAPANI, in Geography, a fea-port town of Sicily, in the valley of Mazarra, situated on a peninsula, with a good harbour, defended by a fort, which flands on a small island, called Colombara. This town was anciently called Drepanum, from the fimilitude its haven is thought to have borne to a fickle. It is ancient, and, according to Virgil, existed in the time of Æneas. According to Diidorus, it was fortified in the first Punic war by Hamilcar, the father of Hannibal. The Carthaginians were always defirous of poffefling this city on account of its harbour. Here is a good pearl-fisfery on the coaft, and in the neighbourhood a confiderable falt-work. The number of inhabitants is about 20,000; 43 miles W.S.W. of Palermo. N. lat. 3° 10'. E. long. 12° 20'.

TRAPESO, in Commerce, a weight in Malta, Sicily, and Naples. At Malta, gold and filver are weighed by the libra or pound of 12 ounces. The ounce is divided into 16 parts, or into 32 trapezi, and the trapеzo into 18 grani. This pound weighs 4888 English grains; and thus 270 lbs. or ounces of Malta = 615 lbs. or ounces Troy. At Naples, gold and filver are weighed by the libra of 12 ounces, the ounce being subdivided into 30 trapezi, and the trapеzo into 20 achili. The pound of Naples weighs 4950 Troy grains; hence 64 lbs. or ounces = 55 lbs. or ounces Troy weight.

TRAPEZA, in Ancient Geography, a promontory of Afa Minor, in the Troade, at the entrance of the Hellespont, and 18 miles from the small town of Dardanum. Pliny.

TRAPEZIUM in Anatomy, a plane figure contained under four unequal lines.

TRAPEZIUS, in Anatomy, (circularis, dorso-fus-acro- mien,) a broad and flattened muscle, of triangular shape, describing with that of the oppofite side the lozenge figure, whence its name is derived, situated on the posterior surface of the neck and back, and reaching from the head and vertebral column to the scapula and clavicle. Its line of origin is very long. It arises, by a thin aponeurofis, from the occipital tuberofity, and the external tranferve ridge of the bone; from the ligamentum nuchae in its whole length; from the spinous procefs of the last cervical vertebra; from the fipnes of all the dorsal vertebrae, and the intervening interfipnal ligaments, by means of fhort aponeurotic fibres, except from the fixth cervical to the third dorsal vertebrae inelusive, where these fibres are much longer, and form a broad feni Maiaponeurofis. At the lower part too, the origin of the trapеzius presents an aponeurofis of fome breadth. The muscular fibres pursue various directions: the superior, which are the thifteft, defend; the middle ones pass horizontally; and the inferior ones ascend; the two latter portions are much thicker than the upper. The middle fibres are the fhortefl, the upper and lower confiderably longer. The fibres converge towards the shoulder, and form a flat aponeurofis, which, having pafled over the smooth triangular fpace at the root of the fpine of the fcapula, is fixed to the inferior margin of that procefs in its whole length, to the inferior margin of the acromion, to the ligaments of the fcapulo-clavicular joint, and to one third of the posterior edge of the clavicle. Numerous fleshy fibres are infiltrated, with aponeurotic ones, in the acromion and clavicle.

The posterior flat furface of the trapеzius is every where subcutaneous; the cellular fubfance between it and the skin does not contain much fat, particularly about the neck. Its anterior furface covers the complexus, splenii, levator fcapula, ferratus superior pollicis, suprascapulatus, rhomboideus, the triangular furface at the root of the fcapular fpine, the infraspinatus, latissimus dorsi, and a fmall portion of the longifimus dorsi and facrombularis. The upper and lower edges of the muscle are oblique: the former from the occiput to the clavicle, the latter from the last dorsal vertebra to the fcapula.

The trapеzius carries the shoulder backwards, at the fame time making the fcapula rotate, fo as to turn its inferior angle forwards, and the inferior backwards. In this way the shoulder is elevated, as in supporting a burden. If the levator fcapula acts with it, the fcapula is moved direcfly upwards: if the rhomboideus, direcfly backwards. When the shoulder is fixed, it will extend the head, and incline it, with the trunk, to one fide.

TRAPEZOID, in Geometry, a plane irregular figure, having four fides, no two of which are parallel to each other.

TRAPEZOPOLIS, in Ancient Geography, a town of Afa Minor, in the interior of Caria. Ptolemy.

TRAPEZUNTINA LAURUS, a name used by some botanical authors for the laurens, or common laurel.

TRAPEZIUS, in Biography. See George of Trebizond.

TRAPEZUS, TERRISONDE, in Ancient Geography, a populous town of Greece, E. of Pontus, and on the coaft of the Euxine Sea. It was a colony of Sinope. In the retreat
retreat of the 10,000 Greeks, they sojourned about a month near this town; and as they had a great number of cattle, they offered sacrifices to Jupiter the Saviour, to Hercules, and to other deities. They celebrated also the Gymnic games on the mountain where they encamped. The inhabitants of Trebifonde furnished the Greeks with two vessels, one of 50 and another of 30 oars. Trapezus was the boundary of the ancient kingdom of Pontus, and the commencement of the Colchide. - Alto, a town of Arcadia, S. of the river Alpheus and near it, towards the W. and not far from Megalopolis. It was abandoned by its inhabitants, and fink into ruin upon the establishment of Megalopolis. On the left of the Alpheus is a place named "Bathos," where were triennially celebrated the mysteries of the gods. See TREMISI. 

**Trapezus Mons**, mountains of the Tauric Cheroneus, W.S.W. of mount Cimmerus. M. de Peyronel says that the Trapezus comprehended the mountains now called Jacbelow, Biskhefarai, and Katchi.

**TRAPEZUSA**, a town of Aifa, in the interior of the Cappodocien Pontus. Ptolemy.

**TRAPOLIZA**, in Geography, a town of European Turkey, in the Morea; 30 miles N. of Mystra. N. lat. 37° 40'. E. long. 22° 26'.

**TRAPP, Joseph, D.D.** in Biography, a divine and poet, was born in 1679, probably at Cherrington, in Gloucestershire, where his father was rector, educated at Wadham college, Oxford, of which he was a fellow, and in 1702 commenced M.A. and took orders. As a specimen of his talents for poetry, he wrote a tragedy, entitled "Aramule, or Love and Empire," which was acted in 1704. In 1708 he was chosen professor of poetry at Oxford, the duties of which office he performed by delivering lectures in elegant Latin; which lectures were published under the title of "Prælectiones Poetice," and an English translation was printed by Bowyer in 1742. In 1711 Trapp was chaplain to the lord chancellor of Ireland, and published in the same year "A Character of the present Set of Whigs," of which, as well as of the author, Swift, who sent it to the presses, speaks contemptuously in his letters to Stella. He recommended him, however, to be chaplain to Lord Bolingbroke, who gave him the rectory of Harlington in Middlex. He was also appointed lecturer of St. Martin's-in-the-Fields; and afterwards obtained the vicarage of the united parishes of Chrift-church, Newgate-Greet, and St. Leonard's, Fother-lane. At this time he was deemed a popular preacher. As a poet, he published a flat and prosaic translation of Virgil in blank verse, Latin versions of Anacreon, and Milton's Paradise Lost. He also wrote several English poems, one of which was "On the Four Last Things." In 1721 he married. His subsequent publications were "Sermons at Lady Moyer's Lecture," various other "Sermons," and "A Defence of the Church of England against the Church of Rome." In 1727 he was created D.D. at Oxford by diploma. He died at the parfonage-house in Chrift-church, in 1747, with the character of an excellent scholar, an instructive preacher, and a worthy man. Biog. Brit.

**TRAPPE, Monks of La**, in Ecclesiastical History, monks of the Cistercian order, belonging to an abbey beautifully situated on a large valley in the province of Le Perche, on the confines of Normandy, in France. The abbey was founded in 1140 by Rotrou, count of Perche, and dedicated under the name of the Blessed Virgin, in 1214, by Robert, archbishop of Rouen. This abbey was subjected to a very rigorous discipline by the abbé d'Rance, in 1654. Encyclop.

**TRAPPINGS.** Among the ancients, some will have the horse-trappings to have been placed on their breasts; others, on their forehead; and others, again, on their cheeks; that on the breast was a small kind of shield, finely polished.

**TRAPRAIN LAW, in Geography,** a mountain of Scotland, in the county of Haddington; 4 miles E. of Haddington.

**TRAPS, The,** a town of Pennsylvania; 26 miles N.W. of Philadelphia.

**TRAPSALO,** in Zoology, a name given by the Greeks in the Levant to a species or variety of Calamary, or Sepia Loligo (which fee), called by the Provençais Arqui. It resembles the common calamary, but differs from it by the extraordinary size of its eyes, by a less extent of fins, by its feet having a greater number of small bony points to their cardilaginous tubercles, by a less length of back-bone, by the fin's having a smaller quantity of black liquor, and by its becoming very large. The Greeks are of opinion, that their trapalo is only the calamary changed by age. The arqui approaches the coast more frequently than the calamary; it often comes on the sand of the shore, and there deposits its eggs, whereas the calamary never goes on land. The flesh is better and less difficult of digestion; but their eggs have a flight purgative property, from which no bad effects are felt. It is considered as a preface of a tempest, when the calamaries dart out of the water. Sonnini's Greece, p. 128.

**TRAPTOWN, in Geography,** a town of Maryland; 7 miles S.W. of Fredericktown.

**TRAQUAIR,** or TRE-QUAIR, a parish in the shire of Peebles, Scotland, on the southern bank of the Tweed, is watered by the river Quair, which has its rise and its whole course in the parish to which it communicated its name; Tre-Quair signifying a dwelling on the Quair. The present parish is comprised of the old parish of Traquir, with that half of the ancient parish of Kailzie, which lies on the south side of the Tweed, and to which it was annexed in the year 1674. Its greatest length from E. to W. is about nine miles; its greatest breadth, from the Tweed to the source of the Quair, is from four to five miles: the whole contains 17,290 acres, of which about 4000 are arable. The surface is rocky and mountainous. Minchoor, one of the hills, is upwards of 2000 feet above the level of the sea; and Gumsfleugh and some other heights are elevated above 2000 feet more. The hills, in general, afford excellent pasture for sheep, of which there are above 10,000 in the parish. The soil in the low grounds is shallow and fliny, but tolerably fertile; and the air fabulous. In the population return of the year 1811, the number of inhabitants was stated to be 621, occupying 102 houses. The church was rebuilt in the year 1785. A parochial school is established, with a salary of 300 marks and perquisites, a free house and garden. Traquir House, the residence of that branch of the Stewart family who derive the title of earl from this parish, is seated on the bank of the Tweed; and on the side of a hill, which overlooks the lawn, are the remains of "The Bush aboon Traquir," celebrated in ancient melodies, and probably in former times a considerable thicket, but now reduced to five solitary thorn-trees. Part of the mansion is of very remote antiquity;
TRATOW, a town of the duchy of Holstein; 6 miles S. of Segeborg.

TRATTINICKIA, in Botany, is so called by Willdenow, in honour of a Vienna botanist named Trattinnick. The name of Leopold Trattinnick occurs in Mr. Dryander's Bibl. Bankf. v. 3. 646, 648, and 654, as the author of some botanical treatises in German. Persoon, it appears from Pursh 519, has a Trattinickia, which is Marshallia of Pursh, after Schreber. (See that article.) We must presume Willdenow to be most correct in the above orthography. — Wildl. Sp. Pl. v. 4. 975. — Clas and order, Polygania Monococ, Wildl.; rather Pentandria Monogynia, Nat. Ord. Terebinthaceae, Jull.

Gen. Ch. Cal. Perianth inferior, of one leaf, hairy, bell-shaped, with three teeth. Cor. of one petal, bell-shaped, longer than the calyx, with three flight, somewhat hairy at its outside. Stam. Filaments five, awl-shaped, very short, inserted into the receptacle; anthers oblong, erect. Ptl. Germin ovate, superior; style awl-shaped, the length of the stamens; stigma simple. Fruit unknown.

Obf. There are some flowers male only, having merely a short style, without any germ. But we cannot for that reason admit the genus into Polygania, there appearing to be no difference of structure in the other parts of the flowers.


1. T. rheiifolia. Sumach-leaved Trattinnickia. Wildl. n. 1.—Found in the province of Para, in Brazil, by count Hoffmannsegg, who communicated a dried specimen to professor Willdenow. — A large and very handsome tree, whose ultimate branches are striated and smooth, as thick as the little finger. Leaves alternate, a longer, pinnate, two feet long, composed of even pair of opposite leaflets, with an odd one, which are corded, four or five inches in length, oblong, pointed, entire, rigid, rough on both sides, very strongly heart-shaped at the base. The common footstalk is cylindrical and striated; partial one half an inch long, corrugated. Stipulas lanceolat, an inch long, rough with hairs, deciduous. Panicle terminal, spreading, compound, five inches in length. Flowers white, feathery, in little round tufts. The panicle ends in a pointed bud, expanding into a branch after the flowering is over, so that the branches of the panicle subsequeintly become lateral. The habit of this plant most resembles Cannarium, though the genus is unquestionably distinct. Willd.

TRATUZ, a town of European Turkey, in Moldavia; 49 miles S. of Niemecz.

TRAU, or Trochila, a town of Dalmatia, pleasanly situated on a piece of land, which was formerly a peninsula, but now separated from the continent by a canal cut through. It is divided into the New and Old; the latter of which has a double, the former only a single wall, and defended by three towers. The harbour, which is formed by a bay, has depth of water enough for the largest ships, which ride there sheltered by two capes. It abounds also in fish, particularly fine fardines. It was an ancient Roman colony of the emperor Claudius; and so early as the year 997, put itself under the protection of Venice; on which it has been continually dependent ever since the year 1420, though not without many changes and disfavour revolutions. Vines, olives, figs, and almonds are cultivated here, and some corn, which however is not the richest produce of these parts. The internal part of the territory of Trau, which
is about 100 miles in circuit, on the continent, produces very little wine, and scarcely any oil. The flocks that feed there, together with those on the island under the same jurifdiction, yield about 400,000 pounds of cheese, and wool in proportion. The number of inhabitants in this territory is about 20,000; 12 miles W. of Spalatro. N. lat. 43° 30'. E. long. 16° 30'.

Trau Vecchia, a town of Dalmatia; 12 miles S.W. of Trau.

TRAVAIATO, a town of Italy, in the department of the Mela; 6 miles W.S.W. of Brescia.

Travail, (from the French verb, travailler,) labour, toil, fatigue; but it is more generally applied to the pains of labour, or child-birth. See Labour.

Travail, in the Manoe. See Travice.

TRAVAILLER, Fr., in Music, to labour, work. In English music, a fuge is said to be well-worked, if the subject is frequently and ingeniously brought in, with new accompaniments and modulation: and an inward part of a Polyphonic composition is said to be well-worked, if some particular design is carried on in a spirited manner, while the other parts are fulfilling flow notes in pure and pleasing harmony. The Italians express much the same at present by the term tirato. A subject or theme well treated, is said to be ben tirato. The old Italian masters used to call any series of notes ascending or descending, regularly tirata, in the same sense as the French tirade; which fee.

TRAVANCORE, in Geography, a city of Hindoostan, and capital of a country of the same name; 108 miles S.S.W. of Madura. N. lat. 8° 22'. E. long. 77° 14'.

Travancore, a country of Hindoostan, situated in the S. part of the coast of Malabar, and southward of the Carnatic; about 90 miles in extent from N. to S.; governed by a rajah. This country began to rise into importance about the year 1730, by the abilities of the king, or rajah. Around the capital and chief province, he suffered the woods to grow for a number of years, till they formed an impenetrable belt of great depth. This, cut into labyrinths, afforded easy egress to his people, and rendered all attacks from without impracticable. Immured within these natural fortifications, he encouraged the cultivation of the arts and sciences; he invited the approach of men of genius and knowledge; he cultivated the friendship of the Brahmins, and was himself admitted into their society, by the ceremony of paffing (as Raynal says) through a golden cow, which became the property of the Brahmins, the cow being sacred in India, as formerly in Egypt; and by preparing his own military stores, calling iron, making gunpowder, &c., he rendered himself independent of foreign aid. The subjects of his remote provinces, who, to avoid the ravages of war, had taken refuge within the woody circle, now returned with their families and effects to their former habitations.

Even the approach to this difficult retreat was impeded by the famous lines of Travancore, which extended from the southern banks of the river Cranganore, close to the sea, to the foot of the Ghauts, strongly fortified in their whole extent. These proved the first check to the ambition of Tippoo Sultan. Tippoo, from the outside of the lines, was a spectator of the horrid carnage of his followers. The Nairs, pressed on him on all sides, and being repulsed with disgrace, and himself thrown over from his horse in the retreat, he is said to have made an oath, that he never would wear his turban again, till he had taken the rajah's lines; and accordingly he prepared to attack them by regular approach. On April 12th, 1799, he completely executed his menaces, and laid Cranganore in ruins, carried defilement through the country, and put every opponent to flight.

TRAVAY BAY, a bay on the S.W. coast of Tiree, one of the Western islands of Scotland. N. lat. 56° 31'. W. long. 6° 48'.

TRAUCHBURG, or Trauenburg, a town and castle of Germany, in the circle of Swabia, which gives name to a small county situated to the S.W. of the territory of Kempten; 12 miles E. of Wangen.

Trave, a river of Germany, which rises from a lake in the duchy of Holstein, 2 miles W. of Arensbok, passes by Oldeslohe, Lubeck, &c. and runs into the Baltic, about 10 miles N.E. of Lubeck. N. lat. 54°. E. long. 10° 55'.

Trave, in Agriculture, a term applied, in some districts, as Effex, to a large fort of louk of the wheat kind. In the work of traving, fourteen sheaves are fet in a flanting position, head to head, across a furrow, and pressed together as close as may be; a single sheaf being then firmly placed in the furrow against each end of the trave. The traves are by this means made quite secure, solid, and compact, and may defy almost any force and violence of the wind. In some cafes, instead of placing sheaves at the ends in this way, they are laid along the top or ridge of the trave; which, without doubt, at once better preserves the trave from the rain and wet, and gives a freer passage to the air between the sheaves, and sooner dries them, in case of their having been thoroughly soaked with rain; but then they are not nearly so strong to withstand powerful storms and blasts of wind as in the other mode of constructing them. See Harvesting.

Trave, among Farriers, the fame with travice.

TRAVELLER, in a Ship, a port of thimble, whole diameter is much longer, in proportion to the breadth of its surface, than the common ones. It is furnished with a tail formed of a piece of rope, about three feet in length, one end of which encircles the ring to which it is fixed. These machines are principally intended to facilitate the hoisting or lowering of the top-gallant-yards at sea; for which purpose, two of them are fixed on each back-sail, whereon they slide upwards and downwards, like the ring of a curtain upon its rod; being thus attached to the extremities of the top-gallant-yard, they prevent it from swaying backwards and forwards, by the agitation of the ship, whilst the yard is hoisting or lowering at sea. Falconer.

TRAVELLER'S Joy, in Botany. See Clematis.

TRAUMENDEN, in Geography, a sea-port of the duchy of Holstein, on the Baltic, at the mouth of the Trave, belonging to the city of Lubeck, which appoints a governor or commandant. The harbour is capable of containing 60 vessels, and deep enough for those of 200 tons. Men of war ride at anchor in the road. Travemunden is defended by a small fortress, mounting 40 guns, and a garrison of 50 men; 8 miles N.E. of Lubeck. N. lat. 54°. E. long. 10° 51'.

TRAVE, a town of Holstein, on the Trave; 2 miles S.W. of Segeborg.

TRAVERON, a town of France, in the department of the Meuse; 10 miles E. of Gondrecourt.

TRAVES, John, in Biography, a musician brought up in St. George's chapel at Windsor, and afterwards bound apprentice to Dr. Greene, about the year 1730, was elected organist of St. Paul's Covent-Garden; and in 1737, on the death of Jonathan Martin, was appointed one of the organists of the king's chapel. He afterwards attached himself to Dr. Pepusch, and composed his studies solely to the correct, dry, and fanciful style of that master. His compositions, however pure the harmony, can only be ranked with pieces of mechanism, which labour alone may produce, without the assistance of genius.
His passion for fugues, resembled that of an inveterate punter, who never hears a phrase or sentence uttered in conversation, without considering what quibble or pun it will furnish: so Travers seems never to have seen or heard any ferries of sounds, without trying to form them into a fugue, and meditating when and where the answer might be brought in.

Travers, in Geography, a town of the county of Neufchâtel; 11 miles W. of Neufchâtel.

Traverse, or Transverse, something that goes athwart another, i.e. that croffes and cuts it obliquely.

Traverse is particularly used for a piece of wood or iron placed transversely, to strengthen and fortify another: such are those used in gates, windows, &c.

To plane a board against the grain, is also called, among joiners, &c. to traverse it.

Traverse, in Gunner, signifies to turn or point a piece of ordnance, which way one pleases, upon her platform.

The laying or removing of a piece of ordnance, or a great gun, in order to bring it to bear, or lie level with the mark, is also called traversing the piece. See Gunner.

Traverse, in Fortification, denotes a trench with a little parapet, sometimes two, one on each side, to serve as a cover from the enemy that might come in flank. See Glacis, and Plate V. Fortification, fig. 6, in which w, w, represent traverses, constructed at the extremities of the places of arms, which serve to enclose them: these traverses are three toises thick, and as long as the covert-way is broad; and a palisade is cut in the glacis round them of about six or eight, in order to have a free communication with the rest of the covert-way. There are also traverses of the same dimensions before every salient angle of the bastion and outworks, and in the same direction of the faces of those works produced; and the thickets lies at the same side as the parapets. The palisades round these last traverses are from six to eight feet wide. The second covert-way has also traverses every where, in the same manner as the first.

Traverses are sometimes covered over-head with planks, and loaded with earth. Each traverse is furnished with a foot-bank, and a row of palisades planted on the foot-bank; and the palisade round its end should be furnished with klinets, or doors, to shut them up when necessary. They are very commodious for flapping an enemy's way, and to prevent being enfiladed: they likewise make a good defence, in a dry fos, in making the parapet on the side next the opposite flank.

Traverse, in a sout foss, is a fort of gallery, made by throwing fauciens, joists, fascines, flanes, earth, and other things, into the fos, over-against the place where the miner is to be put to the foot, or the wall, in order to fill up the ditch, and make a palisade over it.

Traverse also denotes a wall of earth, or stone, raised across a work which is commanded, in order to cover the men.

Traverse also signifies any intrenchment, or line fortified with fascines, barrels, or bags of earth, or gabions.

Traverse, in Navigation, is the variation or alteration of a ship's course, occasioned by the shifting of the winds, currents, &c.; or a traverse is a compound course, in which several different courses and distances are known.

Traverse failing is used when a ship, having set sail from one port towards another, whose course and distance from the port failed from are given or known, is, by reason of contrary winds, or other accidents, forced to shift and fail on several courses, which are to be brought into one course, to learn, after so many turnings and windings, the true course and distance made from the place failed from, and the true point or place where the ship is; that is, the wind coming fair, it may be known how, afterwards, to shape a course for the place intended.

This may be performed geometrically two ways: the first by drawing new meridians, through the extremity of every course, parallel to the first meridian, or north and south line at first made, and setting off every course with a sweep of sixty, as if it were a question in plain failing: you may also let fall perpendiculars to every new meridian, from the point that the ship failed upon that course; by which you have the course, distance, direction of latitude, and departure, to every course.

To illustrate this by an example: a ship, being bound for a port distant 120 miles N.E. ½ E. fails S.S.E. 30 miles, then N.E. by N. 40, then E. by N. 25, then N.N.E. 44; it is required to find the course and distance made good, and also the course and distance to the port bound for?

Draw the line H K (Plate VI. Navigation, fig. 1.) at pleasure, for a meridian, or north and south line, and therein assume a point, as A, for the port failed from; then, with 60 of the chords, and one foot in A, draw the arc L M, upon which set off two points (because the course is S.S.E.) from L to m, and draw the line A m, upon which set off the distance 30 from A to B; then is the ship at B: thus letting fall the perpendicular B K, A K 25° 7' is the difference of latitude, and B K 11° 5', the departure of the first course.

For the second course: with the distance K B draw the parallel B N, and thereby with the chord of 60, as before, set off the second course and distance, N.E. by N. 40, from B to C, and set fall the perpendicular C L; then is the ship at C, the difference of latitude upon the course is B L 33° 3; and departure C L 22° 2.

Proceed in the same manner for the third course: with the parallel C O, set off E. by N. 25, from C to D, and draw the line D P, from which set off the last course, N.N.E. 44; then is your ship at E.

Since, then, the ship came from A, and is now at E, the line A E, measured on the same equal parts upon which all the other distances were taken, will be found 91 miles; and the arc R Q, measured on the rhumbs, five points; viz. N.E. by E; so that the ship is now 91 miles N.E. by E, from the port failed from.

To find her course and distance to the port bound for, set off four half-points upon the arc R Q, from R to S, and from A through S draw the line A S F; upon which set off 120, the distance from the port failed from, to the port bound for, from A to F; then is F the port bound for: now the port bound for being at F, and the ship being but at E, the line E F, measured on the same equal parts that the rect was taken from, will be found to be 31°; and the arc T V, measured on the chords, is 35° 12', or N.E. by N. somewhat easterly, &c. This method is useful where the courses tend generally one way, without interchanging one another; but if they often cross, it is best to have recourse to the second method, which is without new meridians.

In order to this, observe how many points are between the point next to be laid down, and the point opposite to the course laid down; for that is the point for laying down: then when the chord of 60, and one foot in the point the ship is last come to, describe an arc; upon which set off the points found by the aboveaid rule, and through that draw the line for the next course, &c. For an example:

Draw a north and south line, as in the former, as the line R M (fig. 2.), in which assume a point, as at A, for the port
port failed from; then from A set off the first course and distance, viz. N.N.W. 68, from A to B; and for the second course, with the chord of 62, and one foot in B, draw the arc T W, upon which to set off the next course S.S.W. 70: observe the rule above delivered; viz. to take the number of points between the point next to fail on. The reason of which rule is this; if from A to B your course be N.N.W., then back from B to A must needs be S.S.E. the opposite point; and then if you were to fail S. by E. it must be one point to the southward of that S.S.E. line, if S. is two points; and consequentially the next course being S.S.W., you are to set off four points, upon which set off 70 miles, from B to C, and then is your ship at C: for the third course, if from B to C be S.S.W., then from C to B is N.N.E.; but the next course being E. ½ N. the points between N.N.E. and E. ½ N. are five points and a half; and therefore, with the chord of 62, and one foot in C, draw the arc X Y, upon which set off five points and a half from X to Y; and through Y draw the line C D, upon which set off 90 miles from C D: then is your ship at D.

After the same manner lay down all the rest, as D E, which is W.N.W. ½ N. 70; then E F, S. 25; then F G, E. ½ S. 45; then lastly G H, S. 30, which is the last course.

Thus your ship being at H, and the port failed from at A, the line A H, 28 miles, is the distance made good; and the angle at A is four points, viz. S.E.; but the port intended for being S.W. 55, set it from A to K; and the ship being at H, the line H K, 62 miles, is the distance from the ship to the port bound for; and the course is found by measuring the angle at H 71° 45', or W.S.W. more than a quarter westerly, &c.

To work a Traverse by the Tables of Difference of Latitude and Departure.—This is the principal use to which these tables are intended for; and the way of working a traverse by them is equal to the best for exactness, and superior in point of expedition.

Make a little table with six columns, the first for the course, the second for the distance, the third for the northing, the fourth for the southing, the fifth for the easterly, the sixth for the westerly. Then find the difference of the latitude and the departure to every course, and set them in their proper columns; as, where the course is northerly, set the difference of the latitude under northing, or in the north column; and where the course is southerly, set the difference of latitude in the south column.

Again, where the course is easterly, set the departure in the east column; and when westerly, set it in the west column: then, adding up each column by itself, subtract the north and south columns, the less from the greater, the remainder is the northing or southing made good. Also subtract the east and west columns, the less from the greater, the remainder is the easterly or westerly made good; then you have the difference of latitude and departure given to find the course and distance.

In the first example above specified, the first course is S.S.E. 30 miles, or two points 30 miles; for which I find the difference of latitude 27° 7. Now the course being between south and easter, I place my difference of latitude in the south column, and my departure, 11° 5, in the east column, leaving the north and west columns blank.

Then for the second course N.E. by N. or three points 40 miles, my difference of latitude, 33° 3, is to be placed in the north column, and the departure, 22° 2, in the east column: because the course is between the north and east.

Then the third course being E. by N. or seven points 25 miles, I place my difference of latitude, 4° 9, in the north column; and departure, 24° 5, in the east column.

And so for the fourth course N.E. or two points 44 miles, I place my difference of latitude, 40° 6, in the north column; and my departure, 16° 8, in the east column: then adding up each column, the sum of the northing column is 78° 8, and the sum of the southing column is 27° 7; which subtracted from the northing, 78° 8, the remainder, 51° 1, is the difference of latitude made good, which is northing, because the northing was the greater number.

Again, the sum of the easterly column is 75° 0, which, because there is no equivalent to subtract from it, is the easterly made good. Thus you have the northing 51° 1, and the easterly 75° 0 given, to find course and distance; and though you cannot find in the table the exact number of 51° 1 and 75° 0 together, yet find the nearest you can, which is 75° 4; and 50° 9, over which, at the top, you find 34 degrees for the course, which is N.E. by N. 0° 15' easterly, and the distance is 91 miles.

To resolve a Traverse by the Scales on Gunter's Scale, improved by Mr. Robertson. — E.g. A ship in 40° N. lat. and 5° 14' W. long., sails the S.E. by S. 68 min. then S.W. by W. 55 min. and then W.N.W. 75 min. What is her difference of latitude and departure in this general run?

The proportions are, for the

First Course.
As rad. : Diff. :: S. Co. cour. : Diff. lat. :: S. co :
Depart. S. 8 pts. : 68' :: S. 5 pts. : 57' S. :: S. 3 pts. : 38' E.

Second Course.
S. 8 pts. : 55' :: S. 3 pts. : 30' S. 6 S. :: S. 5 pts. : 40' W.

Third Course.
S. 8 pts. : 75' :: S. 2 pts. : 28' S. N. :: S. 6 pts. : 69' 5 W.

Traverse Table.

<table>
<thead>
<tr>
<th>Course</th>
<th>Diff.</th>
<th>Diff. Lat.</th>
<th>Departure</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.E. by S.</td>
<td>68</td>
<td>57.0</td>
<td>38.0</td>
</tr>
<tr>
<td>S.W. by W.</td>
<td>55</td>
<td>30.6</td>
<td>46.0</td>
</tr>
<tr>
<td>N.W.</td>
<td>73</td>
<td>28.8</td>
<td>115.5</td>
</tr>
</tbody>
</table>

General diff. Lat. 58.8
Departure 77.5

The departure made good in this day's run.

To work the above on the Sliding Gunter. — Set fine of 8 points on the fixed piece, by the help of the brass index against 68 num. on the slide; then draw the fixed index to S. 5 points, you will find 57 num. on the slide for the difference of latitude; and (without any alteration) against S. 3 points, on the fixed piece, you will have 38 num. on the slide for the departure.

With the compasses, take the extent from 8 points on the fine rhumbs to 68 on the numbers; the said extent laid the same way from fine 5 points will reach to 57 on the num.
If a matter be expressly pleaded in the affirmative, which is expressly answered in the negative, no traverse is necessary, there being a sufficient issue joined: also where the defendant hath given a particular answer in his plea to all the material points contained in the declaration, he need not take a traverse: because when the thing is answered, there needs no further denial.

**Traverse of an Indictment or Presentment** is the contradicting or denying some chief point of it, and taking issue thereon. See Indictment, and Presentment.

Thus, in a presentment against a person for a highway overflowed with water, for default of securing a ditch, &c. he may either traverse the matter, by alleging that there is no highway, or that the ditch is sufficiently secured; or he may traverse the cause, viz. by alleging that he hath not the land, or that he and they were in estate, &c. have not used to clean the ditch.

It is not customary, nor agreeable to the general course of proceedings, unless by consent of parties, to try persons indicted of smaller misdemeanors at the same court in which they have pleaded not guilty, or traversed the indictment. But they usually give security to the court, to appear at the next assizes or sefions, and then and there to try the traverse, giving notice to the prosecutor of the same.

**Traverse of an Office.** is the proving that an inquisition made of lands or goods is defective, and untruly made. See Office.

No person shall traverse an office, unless he can make to himself a good right and title: and if one be admitted to traverse an office, this admission of the party to the traverse supposes the title to be in him, or else he could have no cause to traverse.

**Traverse** is sometimes used in Heraldry, for a partition of an escutcheon, which they blazon parti per pale, traverse, argent and gules.

**Traverse, in the Mangn.** A horfe is said to traverse, when he cuts his tred crofs-wife; throwing his croupe to one fide, and his head to another.

**Traverse, in Tyle.** See Tyle.

**Traverse Bay, Grand, in Geography,** a bay on the caft fide of lake Michigan. N. lat. 45° 45'. W. long. 85°.

**Traverse Islands, a chain of islands at the caft end of Noquet's bay, in lake Michigan:** on one of the larges is a town of the Ottowa Indians.

**Traverse River,** a river of Louisiana, which runs into the Milfouri, N. lat. 38° 36'. W. long. 92° 5'.

**TRAVERSIERE, FLUTE, commonly the German-flute, being supposèd of German invention. But it has its title of flute traversiere in France, from the different manner of holding it from that of la flute à bec, or common flute.**

Its original compass was from the lowest D in the treble, to a in altiflorno.

Such was the extent of the scale in 1752, when Quantz published his "Methode de la Flute," who was the late Frederic king of Prufiia's maître on that instrument, and the firft who added keys to correct and clear the bad notes.

In the folio Encyclopédie, tom. vi. there is a scale of all the tones, femi-tones, and shades poftible on the instrument, with an additional half-note, C ∑ or D♭, below the usual lowest note of its compass, and three notes above A in altiflorno, the highest note of Quantz's scale. See Music Flutes.

For the history of the flute traversiere, Quantz tells us that in the year 1620 it had no key to make D♭ or E♭, and was called the Swifi flute. It was the French who added the firft key; but it was not known by whom or when.
when. Quantz himself added a second key in the year 1726, and about 1732, a third. Two more keys have since been added by frequent performers on the instrument; but it has been thought more for parade than use: as, the management of five keys in rapid performance, would be as difficult as running divisions on an organ with all the five short keys set into quarter-tones. See TACTET.

TRAVESTY, or TRAVESTI, a term which some late authors have introduced into poetry: it is originally French, being a participle of the word traverter, to disguise one's self, or to appear in maleface. Hence travesty comes to be applied to the disfiguring of an author, or the translating him into a fyle and manner different from his own; and is generally applied to pieces of humour.

Travesty, or parody, may be divided into two classes:—that which is intended to ridicule absurdity, and that the purpose of which is to extract gaiety and laughter from compositions in their own nature grave and admirable. The Rehearsal by the duke of Buckingham is the belt specimen of the former. At a period when falfe taste seems to have prevailed in an eminent degree, which would be most likely to happen when a man of splendid talents like Dryden con-
defends to sacrifice his better judgment for the fpecious allurement of a temporary popularity, an author of wit has the appearance of doing the public a service, who shall call them to fobriety and good fense by the force of ridicule. The second kind of travesty has still fels that can be alleged in its favour. Its direct operation is to pollute our better feelings, and tarniffh with a putrefying film of ridicule all the noblest and most expreflive effufions of the human mind. Here unfortunately ridicule most fally takes hold. We cannot laugh at nothing: the prattle of inanity bids defiance to the ludicrous. There muft be fomething of what we have been accustomed to view with honour in the com-
pofition we are successively invited to contemplate again and again with bursts of laughter against the author. But that which is molt easily turned into burlefque, and affords the molt permanent hold of an attack of this fort, is the language and sentiments that had before excited in us the deepref and molt facred emotions. The very contrari-
ty between the folemn feelings with which these things had been formerly regarded, and the unexpected colour of abstraction which is given them now, makes the temptation to laughter the more violent and irrefiflible.

G. Battifa Lalli has travelted Virgil, or turned him into Italian burleque verse. Scarron has done the fame in French; and Cotton and Philips in English verfe.

Caltalio is, by fome, charged with having travelted the facred text, by reafon of the difference of air and fyle between his verfion and the original.

TRAVICE, in the Mange, is a small inclosure or ob-
long quadrangle placed before a farrier's shop, and conflit-
ing of four pillars or posts, kept close together by crofs poles. This inclosure is designed for holding and keeping in a horfe that is apt to be unruly or disorderly in the time of fhoeling, or of any operation.

This, in fome of the remoter parts of England, goes by the name of a break; and is called in French, travail.

TRAUMATICS, Treparatures, Vulneraries, or medi-
cines good for the healing of wounds. See Vulnerary
and Agglutinant, Healing, and Consolidation.

TRAUMATICUM, Balsamin. See Balsamin

Traumaticum.

TRAUN, in Geography, a river of Auffria, which rifies in the Hallatter See, forms a confiderable lake, called Traun See, and runs into the Danube, about three miles below Steyrefig.—Also, a river of Bavaria, which rifies from two lakes, Forchenee and Daubenree, and enters the Alza, 4 miles N. of Chiemfeet.

TRAVNIKOVA, a town of Russia, on the Lena; 6 miles S.S.E. of Orlenga.

TRAUERKIRCHEN, a town of Auffria; 10 miles S.S.E. of Voglinbruck.

TRAUNSTAIN, a town of Auffria; 4 miles S.W. of Zwettl.

TRAUNSTEIN, a town of Bavaria, on the Traun, where are some confiderable falt-works; 18 miles W. of Salzburg. N. lat. 47° 51'. E. long. 13° 55'.

TRAUSL, in Ancient Geography, a people of Thrace, in the environs of mount Hannus, whose manners, defcribed by Herodotus, resembled thefe of the other Thracians.

TRAUSTADT, or Wschova, in Geography, a town of the duchy of Warflaw; 40 miles S.S.W. of Pofen.

TRAUTENAU, a town of Bohemia, in the circle of Konigingritz; 21 miles N. of Konigingritz. N. lat. 50° 27'. E. long. 15° 48'.

TRAUTENFELS, a town of the duchy of Stiria; 7 miles E.N.E. of Groming.

TRAUTMANSDORF, a citadel in the county of Tyrol; 2 miles N.E. of Tyrol.

TRAUTMANSTORFF, a town of Auffria; 6 miles W.N.W. of Brugg.

TRAVUS, in Ancient Geography, a river of Thrace, which discharged its waters into the lake of Bitonis.

TRAYAGUERA, in Geography, a town of Spain, in Valencia, surrounded by a wall flanked with towers. Here is a Manufacture of fine earthenware; 30 miles N.E. of Valencia.

TRAYL-BASTON, or TRAIL-BASTON. Edward I. in his 32d year, sent out a new writ of inquisition, under this denomination, against the intrudors on other men's lands, who, to opprefs the right owner, would make over their lands to great men; against batters hired to beat men, breakers of peace, ravilers, incendiaries, fitters, false affizors, and other malefactors: which inquisition was fo strictly executed, and fuch fines taken, that it brought in much treafure to the king.

Hence, alfo, juftices of trayl-bafon, a denomination given to the juftices appointed to execute this commiffion, either by reafon of their fervor and fummary way of proceeding, or becaufe a staff was delivered them as the badge of their office, and the offendars were dragged before this jurif-
diction.

TRAYTOR, TRAITOR, Traditior, a betrayer of his
king and country, or one guilty of high-trefon. See TREATON.

TRAYTOROUS or TRAITEROUS Posiion, is parti-
cularly underftood of a tenet, which fome formerly held, of the legality of taking arms, by the king's authority, againft his perfon, and thofe commiffioned by him: which is con-
demned by statute 14 Car. II. c. 3.

TRAZA, in Geography, a town of Arabia, in the country of Yemen; 70 miles N. of Loheia.

TREACLE, in Pharmacy, &c. See Theriac.

The word treacle is alfo popularly ufed for melafes; and in this fenfe it is that Dr. Shaw, in his "Effay on Diffillery," has endeavoured to bring into ufe fcveral forts of treacales, which might be made at home, and would ferve very con-
veniently for the diffillation of spirits, or the making of potable liquors. Thefe are the infpiffated juices or deco-
cions of vegetables: fuch as the fweet juice of the birch, or fycamore, procured by tapping or piercing the trees in spring, and the common Wort made from malt, or from other vegetable fubftances treated in the fame manner. Thefe
liquors
liquors are severally to be boiled down in a copper till they begin to infipitate, and then to be poured into a balene, where the remainder of the evaporation may be finifhed without burning the infipitated juices; thus prepared, it may be at any time reduced to the rate of wort, only by adding a sufficient quantity of warm water.

Treceale is employed for the more quickly fattening some forts of domestic animals, such as sheep and neat cattle, when properly mixed and united with different sorts of dry materials, such as pollard, bruited grain, cut hay, and many other matters of the same nature, as they mollify soon become very fond of it, and it is well known to be of a very nutritious quality. Trials have been made with it in this view, with great success. See Stall-Feeding.

Treceale-Malgard, or Mitridate, in Botany. See Thlaspi.

The feed enters into the composition of the theriaca, and externally used, cleanses all sorts of ulcers, and is also a purgative, but not very common. It is reckoned an enemy to pregnant women, because it kills the fetus. James. See Thlaspeos Semen.

Treceale-Malgard, is also a name given to the clypeola.

Treceale-Water, Aqua Theriacalis, a compound cordial, or spirituous water, distilled with a spirituous menstruum, from any cordial and sudorific drugs and herbs, with a mixture of some of the theriaca Andromachi, or Venice treacle; whence its name.

TREAD, in the Measure. See Piste.

The tread of a horse is considered to be good, when firm, and without the animal resting upon one side of the foot more than upon the other, or setting down the toe or heel one before the other. Where the heels are first set down to the ground, it is often supposed to be a sign that the animal is unfeated in its feet. And where the toes are first put to the ground, it is considered as shewing that the horse has been of the team or draught kind. Consequently, in a good going horse of the caddie foot, the whole foot should be set down equally, at the same instant of time, and neither turned out nor in, in any perceptible degree.

Tread upon the Coronet, is a term applied to any injury which is done to it by the treading of the other horses or animals on it. See Coronet.

TREADHAVEN Creek, in Geography, a branch of the river Choptank.

Treading in Wheat, in Agriculture, the practice of making such land as is light, sandy, and friable, hard and firm by such means after the seed has been put into it, in order to secure its vegetation and growth in a more perfect manner. It has been suggested as useful on different kinds of soil, but it is evidently the most proper for those that are light and open, either from their particular nature and quality, or the sorts of crops by which they have been occupied, as those of the potatoe, turnip, or other simular kinds. In all such cafes, it will be found of great utility and advantage in promoting the establishment of the roots of the plants, by forcing the wheat to strike more strongly into the soil, and by keeping the fronds from injuring and throwing them out while in the early state of their growth. But in stronger lands it may be injurious and hurtful in many circumstances, and mostly unnecessary.

The best mode of effecting it is probably by the use of sheep immediately after the land has been tilled and harrowed, by turning them upon it in sufficient quantities, as they do it in a very effectual manner. Some have, however, recourse to other sorts of animals, as neat cattle and horfes, and to rolling; but this hill seldom answers well, as it is liable to increase the friability below in such soils. The cattle and horses, when in sufficient number, often produce much benefit in this way; and in some places, where the land is of a soft abraded loamy quality, teams of fix or eight oxen are used in covering the seed, in drawing a light pair of harrows, in this intention. Wherever treading is necessary in this view, it should constantly be performed in an effectual manner, with whatever sort of live-stock it is done, whether sheep, oxen, or horfes. Sometimes treading is found beneficial for wheat, on such soils, so late as March, even more so than at the time of putting in the seed, as tending to destroy weeds, such as the corn-poppy, &c.

The practice of treading in the wheats is, of course, mostly to be adopted, in all these cafes, as tending to secure and increace the quantity of the produce whenever such sorts of land are found with that kind of crop. See Wheat.

TREASON, Treachery, the act or crime of infidelity to one's lawful sovereign.

Treason is a general appellation made use by the law, to denote not only offences against the king and government, but also that accumulation of guilt which arises whenever a superior reposes a confidence in a subject or inferior, between whom and himself there subsists a natural, civil, or even spiritual relation; and the inferior so abuses that confidence, and so forgets the obligation of duty, subjection, and allegiance, as to destroy the life of any such superior or lord. Whence

Treason, in our laws, is of two sorts, high and petty.

Treason, High, or Treason Paramount, which is equivalent to the crimen lese majestatis of the Romans, (as Glanvil denominates it also in our English law,) is an offence committed against the security of the king or kingdom, whether by imagination, word, or deed.

In order to prevent the inconveniences which arose in England from a multitude of constructive trefonors, the statute 25 Edw. III. c. 2. was made; which defines what offences only for the future should be held to be trefon; and this statute comprehends all kinds of high-trefon under seven distinct branches.

1. "When a man doth compass or imagine the death of our lord the king, of our lady his queen, or of their eldest son and heir." A queen pregnant is also within the words of the act, though it does not extend to the husband of such a queen. And the king here intended is the king in possession, without any respect to his title: consequently, a king who has reneged his crown, such renunciation being admitted and ratified in parliament, is no longer the object of high-trefon; and the same reason holds in case the king abdicates the government; or, by actions subversive of the constitution, virtually renounces the authority which he claims by that very constitution. As the compalling or imagination, expressed by this statute, is an act of the mind, it cannot possibly fall under any judicial cognizance, unless it be demonstrated by some open or overt act. The statute expressly requires, that the accused be thereof upon sufficient proof attainted of some open act by men of his own condition. Thus to provide weapons or ammunition for the purpose of killing the king, is held to be a palpable overt act of trefon in imagining his death; to conspire to imprison the king by force, and move towards it by assembling company, is an overt act of compassing the king's death; and taking any measures to render treasonable purposes effectual, as assembling and consulting on the means to kill the king, is a sufficient overt act of high-trefon. It now seems clearly to be agreed, that, by the common law and the statute of Edw. III., words spoken amount only to a high misdemeanor, and no treason. If the words be set down
TREASON.

down in writing, it argues more deliberate intention; and it
has been held, that writing is an overt act of treason; for
scribere est ager.

But even in this case, the bare words are not the treason, but the deliberate act of writing them. It
was formerly held, that the publication of a treasonable
writing was a sufficient overt act of treason at the common
law; though of late even that has been questioned.

2. The second species of treason is, “if a man do violate
the king’s companion, or the king’s eldest daughter un-
married, or the wife of the king’s eldest son and heir.” By
the king’s companion is meant his wife, and by violation is
understood carnal knowledge, as well without force, as with
it; and this is high-treason in both parties, if both be con-
senting.

3. The third species of treason is, “if a man do levy
war against our lord the king in his realm.” And this may
be done by taking arms, not only to dethrone the king, but
under pretence to reform religion, or the laws; or to remove
evil counsellors, or their grievances, whether real or pre-
tended; and by intimidation and violence to force the re-
peal of law.

4. “If a man be adherent to the king’s enemies in his
realm, giving to them aid and comfort in the realm, or else-
where,” he is also declared guilty of high-treason. This
must likewise be proved by some overt act, as by giving
them intelligence, by sending them provisions, by selling
them arms, by treacherously surrendering a fortress, or the
like.

5. “If a man counterfeit the king’s great or privy-seal,”
this is also high-treason.

6. The sixth species of treason under this statute is, “if a
man counterfeit the king’s money; and if a man bring
false money into the realm counterfeit to the money of
England, knowing the money to be false, to merchandise
and make payment withal.” Counterfeiting the king’s
money is treason, whether the false money be uttered in
payment, or not. Also if the king’s own minters alter the
standard or alloy established by law, it is treason. But
gold and silver money only are held to be within this
statute. With regard, likewise, to importing foreign coun-
terfeit money, in order to utter it here; it is held that
uttering it, without importing it, is not within the statute.

7. The last species of treason ascertained by this statute
is, “if a man slay the chancellor, treasurer, or the king’s
justices of the one bench or the other, justices in eyre, or
justices of assize, and all other justices assigned to hear and
determine, being in their places doing their offices.” This
statute extends only to the actual killing of them, and not
to a wounding, or bare attempt to kill them. The barons
of the exchequer are not within the protection of this act;
but the lord keeper or commissaries of the great seal now
seem to be within it, by virtue of the statute 5 Eliz. c. 18.
and 1 W. & M. c. 21.

The new treasons created since the statute 1 M. c. 1.
and not comprehended under the description of statute
25 Edw. III. may be comprised under three heads. The
first species relates to Papists; the second, to falsifying the
coin (see British Coins) or other royal signatures; as falsely
forging the sign manual, privy siget or privy seal, which
shall be deemed high-treason. (1 M. l. ii. c. 6.) The third
new species of high-treason, is such as was created for the
security of the Protestant succession in the house of Ha-
over. For this purpose, after the Act of Settlement was
made, it was enacted by statute 25 Edw. III. c. 3, that
the pretended prince of Wales, assuming the title of king
James III., should be attainted of high-treason; and it was
made high-treason for any of the king’s subjects to hold cor-
respondence with him or any person employed by him, or to
remit money for his use. And by 17 Geo. II. c. 39, it is
enacted, that if any of the sons of the Pretender shall land
or attempt to land in this kingdom, or be found in the king-
don or any of its dominions, he shall be adjudged attainted
of high-treason; and corresponding with them or remitting
money to their use, is made high-treason. By 1 Ann. flt. 2.
c. 17, the offence of hindering the next in succession from suc-
cessing to the crown is high-treason; and by 6 Ann. c. 7, if
any person shall maliciously, advisedly, and directly, by writing
or printing, maintain, that any other person hath any right to
the crown of this realm, either without according to the
Act of Settlement, or that the kings of this realm, with the
authority of parliament, are not able to make laws to bind
the crown and its defective; such person shall be guilty of
high-treason.

The punishment of high-treason in general is very solemn
and terrible. 1. That the offender be drawn to the gallows,
and not be carried or walk; though usually (by connivance,
at length ripened by humanity into law) a fledge or hurdle
is allowed, to preserve the offender from the extreme tor-
ment of being dragged on the ground or pavement. 2. That
he be hanged by the neck, and then cut down alive. 3. That
his entrails be taken out, and burned, while he is yet alive.
4. That his head be cut off. 5. That his body be divided
into four parts. 6. That his head and quarters be at the
king’s dispofal.

The king may, and often doth, discharge all the punish-
ment, except beheading, especially where any of noble blood
are attainted. For beheading being part of the judgment,
that may be executed, though all the rest be omitted by the
king’s command. But where beheading is no part of the
judgment, as in murder or other felonies, it hath been said
that the king cannot change the judgment, although at the
request of the party, from one species of death to another.
See Execution.

In the case of coining, the punishment is milder for male
offenders; being only to be drawn, and hanged by the neck
till dead. But in treasons of every kind, the punishment
of women is the same, and different from that of men: for,
as the decency due to the sex forbids the exposing and publicly
mangling of their bodies, their sentence is to be drawn to the
gallows, and there to be burnt alive.

The confessions of the judgment pronounced upon a
traitor are attainted, for forfeiture, and corruption of blood.
See ATTAINDER, &c.

It is a maxim, that, in majori probitione, omnes sunt princi-
pales, there are no accusers in high-treason, all are accounted
principals.

Also, that voluntas non reputabitur pro facto, nisi in causa
proditionis, the will is never taken for the deed in any one,
but in that of high-treason. See INDICTMENT.

TREASON, Petit or Petit, according to the fl. 25 Edw. III.
c. 2, may happen three ways: by a servant killing his
master, a wife her husband, or an ecclesiastical person (either
peculiar or regular) his superior, to whom he owes faith and
obedience. A servant, who kills his master whom he has
left, upon a grudge conceived against him during his service,
is guilty of petit treason: so if a wife be divorced a mensa et
thoro, fill the vinculum matrimonii subfatis; and if the kill
such divorced husband, she’s a traitress; and if a clergyman
is underoath to owe canonical obedience to the bishop who
ordained him, to him in whose diocese he is benefited, and
also to the metropolitam of such suffragan or diocesan bishop;
and therefore to kill any of these is petit treason.

A person indicted of petit treason may be acquitted thereof,
and found guilty of manslaughter or murder; and in such case,
it should seem that two witnesses are not necessary, as in the
case of petit treason they are. See Indictment.

The punishment of petit treason, in a man, is to be drawn
and hanged; and in a woman, to be drawn and burnt: the
idea of which latter punishment, says judge Blackstone, seems
to have been handed down to us by the laws of the ancient
Druids, which condemned a woman to be burnt for murder-
ing her husband; and it is now the usual punishment for all
forts of treasons committed by those of the female sex. Per-
fous guilty of petit treason, were first debared the benefit of
clergy by stat. 12 Hen. VIII. c. 7. which has been since
extended to their aiders, abettors, and counsellors, by stat.
23 Hen. VIII. c. 1. 4. and 5 P. & M. c. 4.

This kind gives forfeiture of lands by sequestration to the lord
of the fee. See Forfeiture and Sequestration.

TREASON, Accumulative. See Accumulation. Blackl.
Comm. vol. iv. &c.

TREASON, Appeal of High. It was anciently permitted,
that any subject might appeal another subject of high-treason,
either in the courts of common law, or in parliament, or
(for treasons committed beyond the seas) in the court of the
high constable and marshal. The cognizance of appeals in
the latter still continues in force; and so late as 1651, there
was a trial by battle awarded in the court of chivalry, on
such an appeal of treason; but that in the first was virtually
abolished by the first stat. 5 Edw. III. c. 9. and 25 Edw. III.
c. 24. and in the second expressly by stat. 1 Hen. IV. c. 14.
So that the only appeals now in force, for things done within
the realm, are appeals of felony and mayhem. Blackl.
Comm. vol. iv.

TREASON, Constructive, an offence raised, by forced and
arbitrary construetion, into the crime and punishment of
treason, which never was suspected to be such: a multitude
of these excited before the inconvenience was remedied by
25 Edw. III. c. 2. Constructive treasons were also nu-
merous in the reign of Richard II. and afterwards between
the reign of Henry IV. and queen Mary, and particularly
in the bloody reign of Henry VIII., all which were abro-
gated by the stat. 1 Mary, c. 1. which once more reduced all
treasons to the standard of the stat. 25 Edw. III.

TREASON, Misprision of. See Misprision.

TREASURE, Thesaurus, strong box, a store, or flock
of money, in reserve.

TREASURE, q.d. treasure found, thesaurus inventus,
in Law, is when money, gold, silver, plate, or bullion, is
found in the ground, in any place, and none knows to whom
it belongs.

This should naturally fall to the finder, to whom it for-
merly belonged, as was the rule of the civil law; but par-
cular nations have made particular provisions for it. The
Jews give it to the proprietor of the place where it was
found: the Roman jurisprudence was various with regard to
it; sometimes it was given to the master of the grounds,
sometimes to the finder, and sometimes it was adjudged to the
public treasury.

In England, and also in Germany, France, Spain, and
Denmark, the general usage is, to have such treasure seque-
tered to the king, unleas where the benefit of it is expressly
granted or made over by the king to some other, as the lord
of the manor; and that the prince shall be intitled to this
hidden treasure, is now become, according to Grotius, jus
commune et gentium. If, indeed, he that hid it be known, or
afterwards found out, the owner, and not the king, is intitled
to it. Also, if it be found in the sea, or upon the earth, it
doeth not belong to the king, but the finder, if no owner
appears. So that it feems it is the hiding, not the abandon-
ing of it, that gives the king a property.

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In some places in France it is divided into three parts,
one for the king, one for the proprietor of the land, and one
for the finder.

Briton says, it is every subject's part, as soon as he hath
found any treasure in the earth, to make it known to the
coroner of the county, &c.

The punishment for concealing treasure found in England,
was formerly no less than death; but now it is only imprison-
ment and fine; but if any mine of metal be found in any
ground, it always appertains to the lord of the soil, except
it be a mine of gold or silver, which anciently always be-
longed to the king, in whose ground forever it was found;
but, by an act of parliament, the king hath now only the
pre-emption.

TREASURER, an officer to whom the treasure of the
prince, or corporation, is committed to be kept, and duly
dispersed, in payment of officers, and other expenses. See
TREASURE.

Of these there is a great variety. His majesty of Great
Britain, in quality of elector of Brunswick, was formerly
arch-treasurer of the Roman empire. In the states of Po-
land are two grand-treasurers; that of the kingdom of
Poland, and that of the duchy of Lithuania.

In England, the principal officers under this denomination
are, the lord high-treasurer, the treasurer of the house-
hold, treasurer of the navy, the king's chamber, &c. &c.
Anciently, we had likewise a treasurer of the exchequer, trea-
urer of war, &c. In the Roman countries, the title of treasurer is also
given, somewhat abusively, to an ecclesiastical, who has the
keeping of the relics, and of the charters and archives of a
church or monastery. This dignity succeeds, in some mea-
sure, to that of the ancient deacons, who had the like charge
in the primitive church.

TREASURER of England, Lord High, is the principal
officer of the crown; under whose charge and government is
all the king's revenue kept in the exchequer.

He receives the office by delivery of a white staff to him
from the king, and holds it during the king's pleasure: an-
ciently he received it by delivery of the golden keys of the
treasury.

He has the cheque of all the officers any way em-
ployed in collecting imposts, customs, tributes, or other
revenues of the crown. He has the gift of all the customs,
comptrollers, and searchers' places, in all the ports of
London; and the nomination of the escheators in every
county.

He alone (or others in commissione with him) lets leaves of
crown-lands, gives warrants to certain persons of quality
to have their wine custom-free, &c.

Killing, the lord-treasurer in the execution of his office, is
trea-treson.

The office of lord-treasurer is now in commision.

The number of lords-commissioners is five.


TREASURER of the Household, is an officer who, in the
absence of the lord-warden, has power, with the comptroller
and other officers of the Green-cloth, and the steward of the
Marhalls, to hear and determine treasons, felonies, and
other crimes committed within the king's palace. See
HOUShOLD.

There is also a treasurer belonging to the establishment of
her majesty's household, &c.

TREASURER of the Navy, is an officer who receives money
of the exchequer, by warrant from the lord high-treasurer,
or the lords-commissioners executing that place; and pays all
charges of the navy, by warrant from the principal officers
of the navy. See NAVY.
TRE

Treasurer of the County, he that keeps the county flock.

There are two of them in each county, chosen by the major part of the justices of the peace, &c. at their general quarterly seissen; under previous security given for the money entrusted with them, and the faithful execution of the trust repose on them.

The justices may continue or remove these treasurers at pleasure, and allow each of them a salary of 20l. a year.

The county fock, of which this officer hath the keeping, is raised by rating every parish yearly; and is disposed of to charitable uses, for the relief of maimed foldiers and mariners, prisoners in the county-gaols, paying the salaries of governors of houses of correction, and relieving poor almshouses, &c. And the duty of these treasurers, with the manner of raising the fock, and how it shall be disposed of, is set forth particularly in the statutes of 43 Eliz. cap. 2. Jac. I. cap. 4. 11 & 12 W. III. cap. 18. 5 Ann. cap. 32. 6 Geo. I. cap. 23. See particularly 11 Geo. II. cap. 20, and 12 Geo. II. cap. 29.

Treasurer, in Cathedral Churches, an officer whose buffets was to take charge of the vestments, plate, jewels, relics, and other treasuries belonging to the said churches. At the time of the Reformation, the office was extinguished as needless in most cathedral churches; but it is still remaining in those of Salisbury, London, &c.

TREASURY, the place in which the revenues of a prince are received, preferred, and disbursed.

In England, the treasury is a part of the exchequer; by some called the lower exchequer.

The officers of his majesty's treasury, or the lower exchequer, are the lords-commissioners, one of whom is chancellor, two joint secretaries, private secretary to the first lord, two chamberlains, an auditor, four tellers, a clerk of the seals, officers of the receipt, a tally-cutter, &c. See each officer under his proper article, CHANCELLOR, TELLER, TALLY, &c.

At Rome, under the emperors, there were two kinds of treasuries, the one called ararium, wherein the monies defined to support the charges of the government were kept; the other fiscus, wherein were preferred those intended for the particular subsistence of the emperor and his court. In effect, the ararium belonged to the people, and the fiscus to the prince. See ARARIUM and FISCUS.

We have still a remembrance of this difference among us; but it is confounded in France, &c. where the king disposes absolutely of the public treasuries, &c.

The Athenian treasury was sacred to Jupiter SOUTAR, or the Saviour, and to Pallas the god of riches. Besides the public monies, there were always a thousand talents kept in it, which it was capital to touch, unless on the most pressing occasions. See OPISIODOMUS.

The funds, among the Athenians, which supplied their treasury, were four; viz. the Athenians, the tele, telis; the phori, fagula; the eisbore, eisfogra; and the timematia, tynamata.

The public treasury was divided into three parts, according to the use it was applied to: as 1. The chremata of the diocese, or that expended in civil uses. 2. The chremata for the war, or money designed to defray the charges of war. 3. The chremata, or money intended for pious uses, in which they included the expenses at plays, public shows, and festivals, &c. Potter Archirol. Græc. tom. 1. p. 82.

To each of these branches of the public revenue there was a treasurer appointed, as την την την την την την την, and την την. So we see:

TREASURY, Lords of the. In lieu of one single director and administrator of his majesty's revenues, under the title of lord high-treasurer, it is frequently thought proper to put that office in commission, i.e. to appoint several persons to discharge it, with equal authority, under the title of lords-commissioners of the treasury. See Lord-high-Treasurer.

TREASURY Islands, in Geography, a cluster of islands among Solomon's islands. S. lat. 6° 38' to 7° 30'. E. long. 155° 34' to 156°.

TREAT, in our old Law-Books, signifies as much as taken out, or withheld. Thus a juror was challenged, because he could not dispense 40l. and therefore was treated by the statute, or discharged.

TREATISE, Tractus, a set discourse in writing, on any subject.

A treatise is supposed more express, formal, and methodical, than an essay; but else so than a system.

TREATY, Lat. Fidus, a covenant between several nations; or the several articles or conditions stipulated and agreed upon between sovereign powers.

Sovereigns treat with each other by their proxies, who are invested with sufficient power, and who are commonly called plenipotentiaries. The rights of the proxy are expressed in the instructions that are given him; but every thing he promises within the terms of his commission, and the extent of his powers, bind his constituent. At present, in order to avoid all danger and difficulty, princes refer to themselves the ratification of what has been concluded upon in their name by their ministers. A treaty is valid, if there be no fault in the manner in which it was concluded; and for this purpose nothing more can be required than a sufficient power in the contracting parties, and their mutual consent, sufficiently declared. If, however, a treaty has been honestly concluded by a sovereign without his perceiving any iniquity in it, and turns at length to the detriment of an ally, nothing can be more amiable, more laudable, more conformable to the reciprocal duties of nations, than to yield as much as possible, without being wanting to himself, without putting himself in danger, or without suffering a considerable loss. Since every treaty ought to be made with a sufficient power, a treaty pernicious to the state is null, and not at all obligatory; no conductor of the nation having the power to enter into engagements to do such things as are capable of destroying the state, for the safety of which the empire is entrusted to him. Moreover, a treaty made for an unjust and dishonest intention is absolutely null; nobody having a right to engage to do things contrary to the law of nature. Nations and their conductors ought to keep their promises and their treaties inviolable. This great truth, though too often neglected in practice, is generally acknowledged by all nations: the reproach of perfidy is esteemed by sovereigns a most atrocious injury; and he who does not observe a treaty is certainly perfidious, since he violates his faith. On the contrary, nothing adds so great a glory to a prince, and the nation he governs, as the reputation of an inviolable fidelity to his promise. To violate a treaty, is to violate the perfect right of him with whom we have contracted, and this is to do him an injury. No subsequent treaty can be made contrary to those that actually subsist. Nothing hinders a sovereign from entering into engagements of the same nature with two or more nations, if he is at the same time able to fulfill them with respect to all his allies. But in cases of competition or difference, the most ancient ally ought to be preferred; and, besides, the justice of the cause is another reason of preference between two allies; nor ought we to afflict him whose cause is unjust, whether he be at war with one of our allies, or with another state.

Grotius (De Jure Belli et Prin. I. c. 15. § 5.) divides treaties into two general classes: viz. 1. Those which turn merely
merely on things to which we were already bound by the law of nature; and 2. Those by which we engage something more. Of the first clafs are all the simple treaties of peace and friendship, when the engagements contracted in them add nothing to what men owe each other as brethren, and as members of the human society; as those that permit commerce, paflage, &c. Treaties of the second clafs, in which sovereigns engage to do what they are not obliged to perform by the law of nature, are either equal or unequal. Equal treaties are those in which the contracting parties promise the fame things, or things that are equivalent, or, in short, that are equitably proportioned, fo that their condition is equal; such, e.gr. is a defensive alliance, in which they reciprocally fipulate for the fame fuccors: such is an offensive alliance, in which it is agreed that each of the allies fhall furnish the fame number of veffels, the fame number of troops, of caPafy and infantry, or an equivalent in veffels, in troops, in artillery, or in money. Such is also a league, in which the contingent of each of the allies is regulated in proportion to the interest he takes or may have in the design of the league. Equal treaties may be subdivided into as many kinds as the sovereigns have different transactions between them. Thus they treat of the conditions of commerce, of their mutual defence, of affocations in war, of the paflage they fhall reciprocally grant to each other, or refused to the enemies of their ally, &c.

Nations ought as much as possible to preserve equality in their treaties.

Equal treaties are distinguished from equal alliances. The former are those where equality is kept in promifes; and the latter are those where equal treaties with equal, forming no difference in the contracting parties, or, at leaft, admitting no superiority too plainly pointed out; but only some pre-eminence of honours and rank. Unequal treaties are those in which the allies do not promise the fame things; and the alliance is unequal when it makes a difference in the dignity of the contracting parties. Those unequal treaties that are at the fame time unequal alliances, are divided into two kinds: the first, where the inequality is found on the side of the moft confiderable power, and the second comprehending treaties where the inequality is on the side of the inferior power. Unequal alliances are subdivided into two kinds, fuch as degrade the sovereignty, and fuch as do not.

By another general division of treaties or alliances, they are distinguished into personal and real; the former are those that relate to the person of the contracting parties, and are confined and in a manner attached to them. Real alliances relate only to the things of which they treat, without any dependence on the person of the contracting parties. The personal alliance expires with him who contracted it; but the real alliance is allied to the body of the state, and subsists as long as the state, if the time of its duration is not limited. The alliance terminates as soon as the term of it is expired; but a treaty made for a time may be renewed by the common consent of the allies, and the renewal is manifested either expressly or tacitly.

Treaties between nations are sacred; and he who violates his treaties, violates at the fame time the law of nations; for he defpies the faith of treaties, that faith which the law of nations declares sacred, and he does all in his power to render it vain. But unhappy experience having too fully convinced mankind, that the faith of treaties is not always a sufficient warrant for their being observed, securities have been fought for against perjury; and hence is derived the origin of a guaranty, and hostage, which fee. The interpretation of treaties is fubjecf to certain rules or maxims, of which writers on this fubjecf have enumerated the following. It is not allowable to interpret what has no need of interpretation: if he who can and ought to explain himself has not done it, it is to his own damage: neither of the contracting parties has a right to interpret the treaty at his pleasure: what a perfon has sufficiently declared, ought to be taken for true against him: the interpretation ought to be made according to certain rules previously understood and allowed. For these and other particulars, we refer to Vattel's Law of Nations, b. ii.

For the folemn manner in which the Romans used to conclude treaties, fee Livy, lib. i. cap. 24. The ceremonies observed by the Greeks in making treaties may be seen in Pot-ter, Archæol. Græc. lib. ii. cap. 6. tom. i. p. 525, &c.

In general, it appears that the ancients were very religious, grave and folemn in making treaties; which were always confirmed by sacrifices and mutual oaths, with horrid impreca-tions on the party that should break the terms of agreement.

There are treaties of war, of peace, of marriage, of con-federacy, of neutrality, of capitulation, and of commerce and navigation.

Treaties relating to war are of several kinds. Some of these are connected with alliances, defensive and offensive. In judging of the morality of these several treaties or alliances, or of the lawfulnefs of them, according to the law of nations, the following is an incontestable principle: It is lawful and commendable to succour and affift, in any way, a nation making a juft war; and this affiftance is the duty of every nation, which can give it without being wanting to itself. But he who makes an unjust war is not to be affifted in any manner. Other treaties relating to war include those of neutrality. Sometimes necessity renders a treaty of this fort justifiable; at other times this kind of treaty is the best method of securing peace, and preventing alteration. Some treaties relate to the paflage of troops through a neutral country; and others to the search of neutral ships, &c.

When the powers at war have agreed to lay down their arms, the agreement or contract in which they fipulate the conditions of peace, with the manner in which it is to be restored and supported, is called the "treaty of peace." The effect of this treaty is to put an end to the war, and to abolish the fubjed of it. It leaves the contracting parties without any rights of committing hostility, either for the very fubjed which kindled the war, or for what has passed in the course of it; it is therefore no longer permitted to take up arms again for the fame caufe. Accordingly, in these treaties, the parties reciprocally obligle themselves to a perpetual peace, which is not to be understood as if the contracting parties promised never to make war on each other for any caufe whatever. Peace relates to the war which it terminates; and as it forbids the revival of the fame war by taking arms for the caufe which at first kindled it, is in reality perpetual. As it is the end of peace to extinguish all fubjeds of difcord, animosity, or a perfect oblivion of what is past, should be the leading article of the treaty; and though the treaty should be silent on this head, it is necessarily understood. This treaty binds the contracting parties from the moment of its conclusion, as soon as it has paflèd through all its forms. From this time all hostilities ceafe, unless a day is specified when the peace shall take place; but this treaty becomes obligatory on fubjeds only from the time of its being notified to them. When no term is assigned for the accomplishment of the treaty, and the execution of the several articles, common fenee dialects that every point should be executed as soon as possible. The faith of treaties equally excludes from the execution of them all neglect, all dilator-iness, and deliberate delays. A treaty of peace is a public treaty,
Tre, a town of Spain, in the province of Leon; 46 miles S. of Civid Rodrigo.

TREBELLIANICA, or TREBELLIAN Fourth, in the Roman Jurisprudence, a right belonging to an heir instituted by testament. If the testator, after appointing a full and general heir, spent and disposed of all his effects in legacies; or if he went ultra dictatam, beyond three-fourths thereof; in that case, the heir was allowed to retrench and retain one fourth part of the legacies to his own use. This was called the trebelfiana.

In like manner, if the testator charges his heir with a feoffment of trust, and to restore the inheritance to another; in that case, the heir might likewise retain a fourth of the whole succession, that the quality of heir might not be rendered wholly vain and fruitless.

TREBELLUS-POLlio, in Biography, a Latin historian, flourished about the year 298 of the vulgar era. According to Vopiscus, he wrote the lives of the Roman emperors from the two Philips to Claudius; but we have extant only the latter part of the reign of the elder Valerian, that of his son, the lives of the two Gallici, those of the thirty tyrants, and that of Claudius. He is reckoned one of the "Historia Augusta Scriptores," and praised by Vopiscus for his exactness, which applies only to some dates, as in other points he is very incorrect. His style is somewhat superior to that of the other historians. Volusi.

TREBENDA, in Ancient Geography, a town of Asia Minor, in the interior of Lycia. Ptol.

TREBENITZ, in Geography, a town of Bohemia, in the circle of Leitmeritz; 70 miles S.W. of Leitmeritz. N. lat. 50° 27'; E. long. 14° 5'.

TREBENTSHIKOV, a forteress of Ruffia, in the government of Caucalbus, on the Ural; 64 miles N. of Guryev.

TREBERK, a town of Germany, in the duchy of Anhalt-Cotten; 4 miles N. of Cothen.

TREBES, a town of France, in the department of the Aude; 6 miles E. of Carcassonne.

TREBIA, in Ancient Geography, a river which ran from south to north, commencing in Liguria, south of the valley inhabited by the Prinates, and palling into Gallia Cipadana, across the territory of the Aramines, watered the town of Placentia, and discharged itself into the Padus. The Trebia was famous for the victory obtained by Hannibal, near its mouth, over the preeminent and impudent Sempronius, in the year of Rome 435; on which occasion the Romans lost 26,000 men.

TREBIA, in Geography, a river of Italy, which runs into the Po, 2 miles W. of Piacenza.

TREBIGNO, a town of European Turkey, in Dalmatia; the seat of a bishop; 60 miles S. of Mollar.

TREBINA, a town of Naples, in Bafllicata; 5 miles S.S.W. of Turri.

TREBISACCIA, a town of Naples, in the province of Calabria Circa, on the coast; 10 miles N.E. of Caffano.

TREBISOND, or TARABOSAN, a city of Asiatic Turkey, with a harbour, on the Black Sea, in the country of the Colchians; founded by a Greek colony of Sinope, defended from the Miletians. It derives its historical fame more from the circumstance of its hospitable reception of the 10,000 Greeks after their celebrated retreat, than for having been the capital of that portion of the Lower Empire. From the Romans it was taken by the Scythians, or Tarars, in the time of Valerian. The Greek emperors became afterwards masters of Trebizond, and erected it into a principality; Alexis Comnenes took possession of it in the year 1204. When the French and Venetians made themselves masters
masters of Constantinople, this principality, or, as it is
f sometines called, empire, continued till the year 1462,
when it was taken by Mahomet II., who carried David
Commences and all his family prisoners to Constantinople,
where they were mostly put to death. The town of Tre-
bifond is built on the sea-side, at the foot of a little hill,
pretty steep; its walls are almost square, high embawed,
and, though they are not of the first ages, yet it is very
probable they stand upon the foundations of the ancient in-
closure, which got this town the name of “Trapezium,”
or “Trapezus.” The present walls are built of the ruins
of the ancient edifices, as appears by old pieces of marble
fet in several parts, and whose inscriptions are not legible,
becaus they are too high. The town is large, and not well
peopled; there are more woods and gardens in it than
houfes; and those houfes that are there, though well built,
are but one florly high. The caftle, which is pretty large,
but very much neglected, is situated upon a flat rock, and
its ditchs are cut in the rock. The inferption that is on
the gate of this caftle, the arch whereof is a femi-circle,
shows that the emperor Jullian repaired the edifices of the
town. The port of Trebifond, called “Platana,” is to the
geft of the town. The emperor Adrian caufed it to be re-
paired, as we are informed by Arrian. This port is now
proper for nothing but trajiques. The mole which the
Genoese are faid to have built there is almost defroyed, and
the Turks give themselves very little trouble about repairing
fuch works; 170 miles N.N.E. of Sivas. N. lat. 41° 1'.
E. long. 50° 40'.
TREBITSCH, or Trebitz, a town of Moravia, in the
circle of Iglau, on the Iglawa, with confiderable manu-
factures of cloth, iron, glafs, &c.; 20 miles S.E. of Iglau.
N. lat. 49° 14'. E. long. 15° 50'.
TREBITZ, a town of Saxony; 3 miles N.W. of
Schmeidberg.
TREBIUS, in Lythology, a name given by Joannes
Cuba, and some other writers, to the fish called pliycis by
Aritotle, Aelian, and Pliny.
TREBLE, in Musick, the highest of the four
parts in fymphony, or that which is heard the cleareft and
shrieff of in a concert.
In the like fenfe we fay, a treble violin, treble hautboy,
&c.
In vocal musick, the treble is usually commiffed to boys
and girls. Their part is the treble.
The treble is divided into firt or highest treble, and
second or beft treble. The half treble is the fame with the
counter-tener.
TREBLIZ, in Geography, a town of Bohemia, in the
circle of Leitemitz; 10 miles S.W. of Leitemitz.
TRENBITZ, a town of Silefia, in the principality of
Oels; 12 miles N. of Breclaw. N. lat. 51° 18'. E. long.
17° 2'.
TREBNIZ, a town of Bohemia, in the circle of Leitem-
itz; 6 miles S.W. of Leitemitz.
TREDOWE. See Tribat.
TREBSCHEN, a town of Brandenburg, in the New
Mark; 6 miles S.E. of Zulichau.
TREBSEN, a town of Saxony, in the circle of Leipic,
on the Muldan; 26 miles W. of Meiffen. N. lat. 51° 16'.
E. long. 13° 42'.
TREBUCHET, Trebucquet, or Trebucquetum, a
tumbler, ducking, or eucking-flood. See Cucking-Stool
and Scolds.
Trebucquet, in Artillery, a machine for throwing ftones,
for which purpose a fling was fometimes fixed to it: it
acted by means of a great weight fattened to the fhort arm
of a lever, which being let fall, raised the end of the long
arm with a great velocity.
TREBULAZ MUTUSCA, in Ancient Geography, a town
placed by Strabo and Pliny among the Sabines, the exiftence
of which is testified by many infcriptions. Virgil recog-
nizes it for its olives, which perhaps might have occafioned
its being called “Oliveto.”
TREBULAZ SUFFENATA, a town of Italy, in the
Sabine territory. It is fuppofed to have been fittuated in
the valley of Tura eo, probably at the place called Rocca
Sinibaldi.
TREBURG, in Geography, a town of Heife-Darmfaald;
10 miles W. of Darmfaald.
TREBUXENA, a town of Spain, in the kingdom of
Seville; 12 miles from Xeres de la Frontera.
TRECASE, a town of Naples, in the province of
Otranto; 5 miles E.N.E. of Aeifeano.
TRECASSIS, or Trecasit, in Ancient Geography, a
people of Celtic or Lyonnefe Gaul, according to Pliny and
Ptolemy; fubjeft, in the time of Cefar, to the city of Sens
(civitas Senonum), which was very powerful.
TRECASTE, in Geography, a town of Italy, in the
department of the Olona; 5 miles E. of Novara.
TRECCHINA, a town of Naples, in Basilicata; 36
miles S. of Potenza.
TRECENTA, a town of Italy, in the department of
the Mineco; 25 miles E.S.E. of Mantu,a.— Alfo, a town of
Italy, in the department of the Lower Po; 12 miles
N.N.W. of Ferrara.
TRECHEDIPNA, zevEcj, a formed of qjo, I run,
and inftex, a fugger, in Antiquity, a kind of lively, or dif-
tinguishing habits worn by paraflites; the wearing of which
was a fufficient passport to the tables of their patrons whose-
lively it was.
TRECHINIA, or Trachinia, in Ancient Geography,
a fmall country of Thrify, occupying the whole moun-
tainous part well of the Malici gulf, between the river
Spencerius to the north and mount Oeta to the south. Near
it was Hercules Trachinia.
TRECHIS. See Trachis.
TRECHANT, one of the many names by which the
chemical writers have called quickfiver.
TRECOTHIC, in Geography, a township of New
Hampshire; 65 miles N.W. of Portmouth.
TREDREDE, or Treddle, Chafna, in Natural His-
tory, a part of an egg. See Chalaza.
TREDDECLE. See Aspect.
TREE, Arboz, the first and largift of the vegetable
kind, confifing of a fingle trunk, out of which spring forth
branches and leaves.
Mr. Ray distinguishes the trees and shrubs of our native
growth of England into, 1. Such as have their fower dis-
jointed and remote from the fruit: which are
1. The nufciferous trees, or fuch as bear nuts: as the
walnut-tree, the hazel-nut-tree, the beech, the chefun, and
the common oak.
2. Coniferous trees, or fuch as bear a fquamous or fcaly
fruit, of a conical figure, and a woody or hard ftuff, in
which are many feeds, which, when they are ripe, the
cone opens or grapes in all its ferveral cells or partifions,
and lets drop out; of this kind are the Scotch fir, male and
female; the pine, which, in our gardens, is called the Scotch
fir; the common alder-tree, and the birch-tree.
Thefe trees are also called elfinerous, by reafon that
coniferous trees are generally covered with a burr that
abounds in refin.
3. Bacciferous trees, are such as bear berries, as the juniper and yew-tree.

4. Lamiforous, or fuch as bear a woolly, downy

5. Trees which bear their seeds (having an imperfect

II. Such as have their fruits and flowers coniious;

The latter kinds are either such as have their fruit moist and soft when ripe: as, 1. Pruniferous ones, whose fruit is pretty large and soft, with a stone in the middle; as the black-thorn, or fuc-tree, the black and white bullace-tree, the common wild cherry, the black cherry, &c.

2. Bacciferous, as the strawberry-tree common in

Of such as have their fruit dry when ripe: as the bladdernut-tree, the box-tree, the common elm and ash, the maple, the gaule, or sweet willow, common heath-broom, dyer's-weed, furze or gorse, and the lime-tree.

TREES in full Air, or Standards, are such as naturally rise a great height, and are not topped. See Standards, Standard-Trees, and Timber.

TREES, Dwarf, are fuch as are kept low, and never suffered to have above half a foot of stem. These are used to be kept vacant, or hollow in the middle, that the branches, spreading round about the fides, may form a kind of round bowl, or buhl. See Dwarf-Trees.

TREES, Fortified. See Forest-Trees and Planting.

TREES, Wall, are fuch whose branches are stretched out, and nailed against walls.

For dwarf and wall-trees, fuch are to be chosen out of the nursery for transplantation as are straight, and confift of a single item, and a fingle graft, rather than two or three grafts in several branches: their thickens at bottom, when removed, should be two or three inches.

TREES, Fruits, are fuch as bear fruit. See Fruit-Trees.

TREES, Timber, are fuch whose trunks are tall and straight, of which beams, masts, &c. are used to be made.

TREES, that are nine inches girt about a yard from the ground, are commonly reckoned timber-trees, but none under this fize. See Timber and Planting.

The growth of trees is a curious and interesting subject; but few experiments have been made in order satisfactorily to ascertain the annual accifions that are made to the bulk of trees at different periods of their age. Mr. Barker has furished a table exhibiting the increafe of three kinds of trees, viz. the oak, ash, and elm, in the Phil. Tranf. for 1788. He fates the refult as follows:

"I find (fays he) the growth of oak and ash to be nearly the fame. I have fome of both forts planted at the fame time, and in the fame hedges, of which the oaks are the largest; but there is no certain rule as to that. The common growth of an oak or an ash is about an inch in girth in a year; fome thriving ones will grow an inch and a half; the unthriving ones not fo much. Great trees grow more

timber in a year than small ones; for if the annual growth be an inch, a coat of one-fifth of an inch is laid on all round, and the timber added to the body every year is its length multiplied into the thickens of the coat and into the girth, and therefore the thicker the tree is, the more timber is added."

We will prefent our readers with a table, fhewing the growth of 17 kinds of trees for two years. The trees grew at Cavenham in Suffolk.

<table>
<thead>
<tr>
<th>Names of Trees</th>
<th>July 1785</th>
<th>July 1786</th>
<th>July 1787</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Oak</td>
<td>0 10 1/2</td>
<td>0 11 3/8</td>
<td>1 0 1/2</td>
</tr>
<tr>
<td>2. Larch</td>
<td>1 0 1/2</td>
<td>1 3 1/8</td>
<td>1 4 1/8</td>
</tr>
<tr>
<td>3. Scotch fir</td>
<td>1 3 1/8</td>
<td>1 5 1/8</td>
<td>1 7 1/8</td>
</tr>
<tr>
<td>4. Spruce fir</td>
<td>0 5 1/8</td>
<td>0 6 1/8</td>
<td>0 7 1/8</td>
</tr>
<tr>
<td>5. Spanish chefen</td>
<td>0 7 1/8</td>
<td>0 7 1/8</td>
<td>0 8 1/8</td>
</tr>
<tr>
<td>6. Elm</td>
<td>2 7 1/8</td>
<td>2 9 1/8</td>
<td>2 11</td>
</tr>
<tr>
<td>7. Pinaster</td>
<td>2 3 1/8</td>
<td>2 4 1/8</td>
<td>2 7 1/8</td>
</tr>
<tr>
<td>8. Larch</td>
<td>1 5 1/8</td>
<td>1 6 1/8</td>
<td>1 7 1/8</td>
</tr>
<tr>
<td>9. Weymouth pine</td>
<td>5</td>
<td>6</td>
<td>7 1/8</td>
</tr>
<tr>
<td>10. Acacia</td>
<td>1 2 1/8</td>
<td>1 3 1/8</td>
<td>1 6 1/8</td>
</tr>
<tr>
<td>11. Beech</td>
<td>0 6 1/8</td>
<td>0 7 1/8</td>
<td>0 8 1/8</td>
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<tr>
<td>12. Plane occidential</td>
<td>0 7 1/8</td>
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<tr>
<td>13. Lombardy poplar</td>
<td>1 8</td>
<td>2 0 1/8</td>
<td>2 3 1/8</td>
</tr>
<tr>
<td>14. Black poplar</td>
<td>1 2 1/8</td>
<td>1 4 1/8</td>
<td>1 5 1/8</td>
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<tr>
<td>15. Willow</td>
<td>2 9 1/8</td>
<td>3 2 1/8</td>
<td>3 3</td>
</tr>
<tr>
<td>16. Silver fir</td>
<td>0 7 1/8</td>
<td>0 8 1/8</td>
<td>0 9 1/8</td>
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<tr>
<td>17. Lime</td>
<td>1 8 1/8</td>
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Heat is so efential to the growth of trees, that we fee them grow larger and smaller in a fort of gradation as the climates in which they stand are more or lefs hot. The hottest countries yield, in general, the largest and taller trees, and those also in much greater beauty and variety than the colder do; and even thofe plants which are common to both, arrive at much a greater bulk in the fouthern than in the northern climates; nay, there are fome regions fo bleak and chill, that they raife no vegetables at all to any confiderable height. Greenland, Iceland, and the like places, afford no trees at all; and what shrubs grow in them are always little and low.

In the warmer climates, where trees grow to a moderate fize, any accidental diminution of the common heat is found very greatly to impede vegetation; and even in England, the cold fummers we fometimes have, give us an evident proof of this; for though the corn and low plants have fucceeded well enough, and goofeberries, currants, rafberries, or other low shrubs, have brought forth fruit in fufficient plenty, yet the production of taller trees has been found very much hurt; and walnuts, apples, and pears, have been very fcarce among us.

Heat, whatever be the producing caufe, acts as well upon vegetation one way as another. Thus the heat of dung, and the artificial heat of coal-fires in floves, is found to supply the place of the fun.

Great numbers of the Indian trees, in their native foil, flower twice in a year, and fome flower and bear ripe fruit all the year round; and it is observed of thefe latt, that they are at once the moft frequent and the moft ufeful to the inhabitants; their fruits, which always hang on them in readnefs, containing cool juices, which are good in fevers, and other of the common difeafes of hot countries.

Plantations of ufeful trees might be made to very great advantage in many places in every country, and the country
greatly enriched by it, while the public would be also benefited by it, since it would raise a continual supply of timber used in ship-building, and on other public as well as private occasions.

We have in many places heaths, and other barren and uncultivated lands, of very great extent; and how great an advantage would it be to the public to bring these to be truly valuable. Many, if not all of these heaths, would be found on trial capable of producing trees; and some of them are truly the remains of destroyed forests; and though the profit to be reaped from the planting of them would come late, yet the expense of doing this would be very trifling in comparison of that profit, and the means easy. See **Timber and Plantation**.

The authors who have given rules for planting, having employed themselves only about small spots of ground, the establishing of orchards or parks, are by no means to be supposed proper guides in attempts of this kind; and Monf. de Buffon, who had a great opinion of the knowledge of our Evelyn and Miller, who seem to speak of every thing from their own experience, found, when he felt about large plantations, that their opinions and rules were erroneous; and was obliged to have recourse to experience only, which he varied a thousand ways; and though many of them proved unsuccessful, yet they all gave hints towards others, by which the attempt might afterwards be brought to succeed.

This sagacious inquirer into the operations of nature in the growth of vegetables, having set apart a considerable quantity of land for the trial, and procured a number of young trees, first divided the whole quantity into a number of small squares, and having made a plan of it, examined the nature, depth, and other circumstances of the soil in each, and minutely the whole down on a proper part of the plan; that himself, or whoever succeeded him, might judge from the different growths of a number of trees planted in the same flat in these different soils, the different advantages and disadvantages of every circumstance in the depth and nature of the ground, in regard to the growth of useful trees. Different numbers of labourers were employed upon different spots of this ground, and the acorns for the young growth planted at different seasons: but the result in general was, that what should seem the best methods succeeded the worst; and those pieces where many labourers had been employed, and the acorns planted before winter, were much thinner of young oaks than those where the leaf labour had been belted upon the ground, and where the acorns had been planted in the spring: but those places which succeeded best from the fowing, were those which had the acorns planted in holes made by a pick-axe, without any preceding culture of the ground. And those where the acorns had only been laid upon the earth, under the graps, afforded a great number of vigorous young trees, though the greater part had been carried away by birds and other devouring animals. Those spots of ground where the acorns were set at six inches depth were much worse furnished with young shoots, than those where they had been buried but an inch deep; and in some places where they were buried at a foot deep not one shoot appeared, though in others, where they had been buried at nine inches, there were many.

Those acorns which had been slooped for eight or nine days in wine lees, and in the water of the common feverows, appeared out of the ground much earlier than those which were put in without this previous management.

But the most successful of all the trials, was that of planting in the spring such acorns as had been sown toge-

ther in another place, and had time to root there; of these scarcely any one failed, and the plantation was perfectly flourishing, though the growth of these young shoots was not so quick or vigorous as those of the acorns which had remained when first sown; which was probably owing to the injury the tender radicles received in transplanting.

Thus succeeded the experiments by sowing, while of those made by planting young trees, such as had been brought out of woods and places under covert, succeeded much worse than those which had grown in more exposed places.

The young trees of the several parts of the plantation kept on their growth in the manner they had begun to shoot, those of more laboured parts continuing more weak, and lower than those of the less laboured.

Thus were a number of necessary experiments carefully tried, and the result of the whole was, that to make a plantation of oaks, on a foil of the common clayey or loamy kind, the most successful method is this: the acorns must be preferred during the winter in the earth in this manner; let there be made a bed of earth of fix inches deep; on this place a layer of acorns, two inches deep; and then lay a bed of another half foot of earth, over that another layer of acorns, and so on successively, till as many are employed as there will be occasion for: the whole is then to be covered with a foot depth of earth to preserve all from the frost. In the beginning of March these beds are to be opened, and the acorns, which will by that time have shot out, and are then in reality so many young oaks, are to be planted out a foot distance each, and the success of a plantation of this kind need not be feared. This is a manner of planting that is done at a small expense, and even that might be in a great measure spared, were it not for the birds and other devouring animals; since, could the acorns be defended from these, they might be only laid on the surface of the ground under the grapes in autumn, and they would infallibly shew themselves in so many young oaks the succeeding spring.

It is easy to continue the carrying of the acorns, when taken out of their winter's bed, to the place where they are to be planted, without doing them much injury; and the small sloop the transplanting puts to their growth is in reality rather an advantage than an injury, since it only retards the young shoots for about three weeks, or less than that; and by that means secures them from the few cold mornings that may be expected about the time of their natural appearance. Mem. Acad. Scienc. Paris, 1739. See **Timber**.

An experiment to determine the comparative durability of different kinds of timber, when exposed to the weather, was made by a nobleman in Norfolk; of which an account is given by Sir Thomas Beevor. This nobleman, the year 1774, ordered three polls, forming two sides of a quadrangle, to be fixed in the earth on a rising ground in his park. Into these polls were mortified planks, an inch and a half thick, cut out of trees from 30 to 45 years' growth. These, after standing ten years, were examined, and found in the following state and condition:

The cedar was perfectly found; larch, the heart found, but the sap quite decayed; spruce fir, found; silver fir, in decay; Scotch fir, much decayed; pinafore, quite rotten; chestnut, perfectly found; beale, found; beech, found; walnut, in decay; sycamore, much decayed; birch, quite rotten.

Sir Thomas Beevor jubily remarks, that the trees ought to have been of the same age; and Mr. Arthur Young adds, they ought to have been cut out of the same plantation.
The immense quantity of timber consumed of late years in ship-building and other purposes, has diminished in a very great degree the quantity produced in this country. On this account, many gentlemen who with well to their country, alarmed with the fear of a scarcity, have strongly recommended it to government to pay some attention to the cultivation and preservation of timber.

It appears, on the authority of Mr. Irving, inspector-general of imports and exports, that the shipping of England in 1760 amounted to 6107 in number, the tonnage being 433,921; and the shipping in Scotland amounted to 976 in number, the tonnage being 52,818. In 1788, the whole shipping of Britain and Ireland and their colonies amounted to 13,800, being 1,359,752 tons burden, and employing 177,925 men. The tonnage of the royal navy in the same year was 413,667. It also appears, from the report of the commissioners of the land revenue, that the quantity of oak-timber of English growth, delivered into the dock-yards from 1760 to 1788, was no less than 768,676 loads, and that the quantity used in the merchants' yards in the same time was 516,630 loads; in all 1,285,306 loads. The foreign oak used in the same period was only 137,766 loads. So that after deducting the quantity remaining in the dock-yards in 1760 and 1788, and the foreign oak, there will remain about 1,054,284 loads of English oak, consumed in 28 years, which is at an average 31,653 loads per annum, besides from 8,300 to 10,000 loads expended annually by the East India Company within the same period.

A writer in the Bath Transactions, cited in the Encyclopædia Britannica, article Trees, says, that the aggregate of oaks felled in England and Wales for 30 years past, has amounted to 320,000 loads in a year; and as this statement seems to differ from that above given, under the authority of the commissioners of land revenue, we think it necessary to point out the reason of this difference. This we are enabled to do, by the liberal communication of the ingenious Samuel Purkis, esq: whole diligence of research and accuracy in making the necessary calculations, and fidelity in reporting the result of his inquiries, must be admitted by all who knew him without hesitation. He informs us, that the calculation was made by himself and a friend at the request of Mr. Pitt, then prime-minister, in order to ascertain whether there was a sufficient quantity of oak-timber in this country to supply the probable demand for many years.

The calculations were made from documents furnished by government, and upon principles which could not fail to afford an accurate result. This result was communicated by Mr. Purkis to Mr. South, a man of fortune and respectability in Hampshire, and was published by him in the Bath Transactions. The discrepancy above-mentioned is merely apparent, and not real. For the commissioners of the land revenue only stated the annual consumption in the royal navy, and by the East India Company; whereas Mr. Purkis’s statement comprehended the annual consumption of the whole kingdom; nor had they the means which he possessed of making the latter estimate.

The building of a 70-gun ship, it is said, would take 40 acres of timber; and though this may seem to be an exaggerated estimate, it should be considered, that, according to the prevailing opinion of experienced surveyors, it will require a good soil and good management to produce 40 trees on an acre, which, in 100 years, may, at an average, be computed at two loads each. Reckoning, therefore, two loads at 8l. 16s., one acre will be worth 350L. and consequently 40 acres will be only worth 14,200L. The building of a 70-gun ship is generally supposed to cost 70,000L.; and as ships do not last many years, the navy continually requires new ships, so that the forests must be stripped in a century or two, unless young trees are planted to supply their place.

As the consumption of oak-timber is so considerable, methods should be devised and diligently practised for procuring a fresh supply.

Trees are liable to a variety of diseases and injuries, for the prevention or cure of which various means have been proposed.

The chevalier de Bienenberg of Prague, we are told, has discovered a method of effectually preserving trees from the fatal effects of those frosts which sometimes in the spring destroy the most promising hopes of a plentiful crop of fruit. His method is extremely simple. He surrounds the trunk of the tree in blossom with a wip of straw or hemp. The end of this he links, by means of a float tied to it, in a vessel of spring-water, at a little distance from the tree. One vessel will conveniently serve two trees; or the cord may be lengthened so as to surround several, before its end is plunged into the water. It is necessary that the vessel be placed in an open situation, and by no means shaded by the branches of the neighbouring trees, that the frost may produce all its effects on the water, by means of the cord communicating with it.—This precaution is particularly necessary for those trees, the flowers of which appear nearly at the same time as the leaves; which trees are peculiarly exposed to the ravages of the frost. The proofs of its efficacy, which he had an opportunity of observing in the spring of 1787, were remarkably striking. Seven apricot espaliers in his garden began to blossom in the month of March. Fearing that they would suffer from the late frosts, he surrounded them with cords as above directed. In effect, pretty sharp frosts took place five or eight nights; the apricot-trees in the neighbouring gardens were all frozen, and none of them produced any fruit, whilst each of the chevalier’s produced fruit in abundance, which came to the greatest perfection. See frost.

For Mr. Forysth’s remedy, we refer to the article Composition for Trees. See also Grafting.

Mr. Ray, and other authors, speak of several trees of prodigious bulk.

The jeufet d’Acofla, in his History of the Indies, lib. iv. cap. 3, mentions a hollow tree at Tiacocharaya, three leagues from Guaxa, in New Spain, nine fathoms within side the ground, and sixteen without side. He adds, that it is under this tree the barbarians assembled to perform their religious ceremonies, dance round their idols, &c. Herrera mentions another, which sixteen men, joining hands, could not fathom. And F. Kircher, in his Latium, p. 50, affirms that he has seen a tree, near Gonzano, which would lodge a whole family of twenty-five persons in its cavity. The common people had a tradition, that this tree was planted by Augustus.

There are forests of very large chestnut-trees, growing out of the mount Ætna, in Sicily. One of these, called the Castaggio di Cento Cavalli, is much the most celebrated. It measures 204 feet round, and though said to be united below in one stem, it is a bush of five large trees growing together. The hollow of one of these chestnut-trees is said to contain a hundred sheep, and it is also related, that thirty people have been in it on horseback.


In the Indies there are very large forests formed from a single tree, whose branches bending to the ground, take root, and put forth new trees: the Indian fig-tree and patavciel are of this kind.

M. Lonvillers mentions trees in Peru, one part of whose branches produce fruit one half the year, and the other part
TREES.

part the other half. In China there is a tree which bears tallow, of which that nation make their candles. See SELLER AND TALLOW.

Mr. Marham saw spruce and silver fir in the dock-yard at Venice above forty yards long, and one of thirty-nine yards was eighteen inches in diameter at the smallest end. It was said that they were brought from Switzerland. Some pews have been found in British sixty feet round. Palms in Jamaica attain the height of 200 feet, and some of the pines in Norfolk Island are 280 feet high.

At Tortworth, in Gloucestershire, it is said by the writer of the report on agriculture for that district, that a chefmon-tree was measured in 1791, which was found to be forty-four feet and four inches in circumference.

The great Bodham oak, belonging to the manor-farm of the same name in the same district, before it was burnt down in 1790, either by accident or design, was not less remarkable. It grew in an old orchard-ground, and the following account was given of it by Marshall, in his work on planting, as it appeared in 1783. The stem was remarkably coloured and snug at the root; the fence of its trunk more upright than those of large trees in general; its circumference at the ground somewhat more than eighteen yards, and at its smallest dimensions twelve. The greatest extent of arm, eight yards from the stem; and the greatest height of the branches, forty-five feet. The stem quite hollow, forming a capacious well-sized room, measuring on the floor, one way, more than sixteen feet in diameter. At that time it was perfectly alive and fruitful, with a large fine crop of acorns upon it. Part of the trunk, it is said, escaped the fire, and still remains.

In Needwood forest, the oak-tree called the Swilcar lawn oak contains, as Mr. Pitt supposes, in his account of the agriculture of Staffordshire, at least a thousand feet of timber. The Rev. Mr. Snow says, this oak, the father of the forest, girts at five feet high twenty-one feet; the lowest stem is ten feet clear; the whole height about sixty-five; the extent of the arms about forty-five feet. It is of great antiquity, but still fruitful in acorns.

In the first volume of the Agricultural Survey for the County of Essex, it is stated, that in Hatfield forest sir John Barrington has a very beautiful oak, for which a timber dealer offered one hundred guineas. And that near it is the ruin of a most venerable tree of the same kind, which gave the name of Broad-Oak to Hatfield.

There is a Lombardy poplar in this district which is a very fine and beautiful tree, guessed to be above seventy feet high, and which at five feet from the ground measures seven feet three inches in circumference. It is one of the three original trees of this kind which were brought by lord Rochfort from Italy, and planted at St. Oysth above forty years ago, and from which much the greater part of these which are now scattered through the kingdom originated.

Very near to it is the largest and most beautiful laurel of the Portuguese kind that is almost any where to be seen; it is nearly of a semi-globular form; feathered all round to the crown it grows in, and is fifty-two yards in circumference.

At a small distance from these prodigies of vegetation is, it is said, a new variety of almond, which would be no inconceivable figure at Killarney. They are in the grounds of Mr. Naffau, in which the fruit is a fine rich found loam. See the Report.

There are now growing about Donway Hall, in Lancaster, beside many large fine oak timber-trees, an alder-tree, called the wain-house ash, which measures fourteen feet in circumference; a hazel-tree, which is three feet in girth; an yew-tree, which has six feet two inches of girth; and a white-thorn, in New Copy field, which measures seven feet in circumference.

There are two or three very remarkable phenomena in the growth of trees, which have escaped the observation of the naturalists of all ages, except those of our own: these are the perpendicularity of their trunks or stems to the horizon, and the parallelism of their twigs to the spot of earth they grow on. See PARALLELISM AND PERPENDICULARITY.

For the planting, transplantaing, femonation, pruning, fell-ling, grafting, thridding, &c. of trees. See PLANTATION, PLANTING, &c.

On felling of trees, letters have sometimes been found in the midst of them. We have instances of this kind mentioned in the Philos. Trans. No. 1441, sect. 16. where the trunk of a beech being fawed, discovered several letters in the wood, about an inch and a half from the bark, and near the fame distance from the centre of the trunk. It seems these letters had been formerly cut into the bark, and in process of time these might be covered.

In the same Transactions, we have an account of the horn of a deer found in the heart of an oak. Crucifixes have also been found in trees, and were of course shewn as miraculous to the ignorant. See p. 236. of the said Transactions in the Remarks.

Trees are often found buried in the earth. See MORASS, FOSSIL WOOD, and BOG WOOD.

For the punishment of stealing trees, see LARCENY.

By lat. 1 Geo. I. e. 48. maliciously to set on fire any underwood, wood, or coppice, is made single felony. By the Black-act, to cut down or destroy any trees planted in an avenue, or growing in a garden, orchard, or plantation for ornament, shelter, or profit, is felony without benefit of clergy; and the hundred shall be chargeable for the damages, unless the offender be convicted. By 6 Geo. III. cap. 36. and cap. 48. wilfully to spoil or destroy any timber or other trees, roots, shrubs, or plants, is, for the two first offences, liable to pecuniary penalties; and for the third, if in the day-time, and even for the first, if at night, the offender shall be guilty of felony, and liable to transportation for seven years.

TREES. Differing from of. See the preceding article, and COMPOSITION, &c.

TREES. Hollosness of. See Hollowness.

TREES. Juices of. See Juice and Sap.

TREES. Felting of. See Felling and Timber.

TREES. Parallelism of Roots of. See PARALLELISM.

TREES. Fruit, Barkini of, in Rural Economy, the injury of their having the bark eaten off by hares and rabbits in the winter season. It is particularly the cafe with young apple and pear trees, and occasionally with forest-trees and shrubs. Several different methods of preventing it, and of protecting the trees, have been proposed at different times; such as twisting straw-ropes round the trees; driving in small flat stakes all about them; and the use of strong-scented oils. But better and nearer modes of effecting the business have lately been juggled in the Transactions of the Scotch Horticultural Society; and as hog's-lard, and as much whale-oil as will work it up into a thin paste or paint, with which the limbs of the trees are to be gently rubbed upwards, at the time of the fall of the leaf. It may be done once in two years, and will, it is said, effectually prevent such animals from touching them.

Another and still nearer method, is to take three pints of melted tallow to one pint of tar, mixing them well together over a gentle fire. Then, in the month of November, to take a small brush, and go over the rind or bark of the trees with the composition, in a milk-warm state, as thin
as it can be laid on with the brush. It is found that such a coating does not hinder the juices or sap from expanding in the smallest degree; and the efficacy of the plan is proved in preventing the attacks of the animals, by applying the liquid composition to one tree and marring another, when it was found that the former was left, while the latter was attacked. Its efficacy has been shewn by the experience of five years. The trees that were gone over the first two years have not been touched since; and none of them have been injured by the hares.

It is a mode particularly well adapted for nurseries, where the ground is not well secured with a fence to protect the young fruit-trees and tender shrubs from hares. The above is the proportion of the materials; whatever may be the extent of trees.

Trees, Mossing of, their becoming much affected and covered with the moss-plant or mossy sublance. It is found to prevail in fruit-groves of the apple kind, and in other situations, when they are in low, close, confined places, where the damp or moisture of the trees is not readily removed. It is thought to be an indication of weakens in the growth, or of a diseased state of the trees, and to require nice attention in preventing or eradicating it. The modes of removing it have usually been those of scraping, rubbing, and washing, but they are obviously calculated for trees only on a small scale. How far the use of powdery matters, such as lime, chalk, and others, which are capable of readily absorbing and taking up the wetness that may hang about the branches and other parts of the trees, by being well dusted over them, may be beneficial, is not known, but they would seem to promise success by the taking away the nourishment and support of the moss, when employed at proper seasons. And they are known to answer in destroying moss in some other cases, when laid about the stems of the plants, as in thorn-hedges, and c.

In the fruit-groves of Gloucestershire it is recommended, the writer of the account of the agriculture of that district says, to wash with soap-suds, and rub off the moss with a brush, in wet weather when it is soft, and easily separable from the different parts of the trees. This work should be begun at an early period of the growth of the trees, when the branches are few and open, and be repeated every season; otherwise the labour would be too great to undertake on a large extent, when the trees are full-headed, and entangled with hoots. The fruit-farmer should not, however, be too easily discouraged, since it has been discovered, that the eggs of caterpillars are often lodged between the moss and the rind of the trees, and probably the insects issue forth from these depositaries in the spring, to the destruction of leaf and blossom.

In this district, the mossing of the trees is attributed to the plantations being made on gras-sands, which is the common practice in a great part of the county; as, it is said, that in the neighbouring counties, where the fruit-trees are planted in hop-groves and arable fields, the trees, though not free, are less affected by it. This may, it is supposed, be owing to the frequent manuring and flailing of the mould near the roots, by which means the sun and rain have power to exert their influence, and by invigorating the fibres, promote a general kindred in the growth of the trees.

The mossing in all sorts of trees is injurious to their growth by depriving them of a portion of their nourishment, but more particularly hurtful to those of the fruit-tree kind, as preventing them from bearing full good crops of fruit by rendering them in a weak and unhealthy state.

Trees, Espalier, Cafl-iron Rails for, a new mode of forming this sort of rails. It is noticed in a Paper in the first volume of the Memoirs of the Caledonian Horticultural Society, that the advantages attending rails of this kind in gardens, in respect to utility as well as ornament, are well known and acknowledged. The greater chance they afford to the fruit in setting and ripening, by the branches being laid in at regular and equal distances, the neatness of appearance which the trees exhibit, and the elegant vistas produced by the rail and trees when bordering the sides of well-kept walks, are all matters with which the admirers of horticulture have long been acquainted. It does not appear, however, whatever may have been the cause, that this, by no means uninterseting branch of the art, has hitherto in any considerable degree engaged the attention of the improver.

The rails for trees of this kind have, for the most part, been made of wood, though not without objections; the principal of which are, want of durability in the substance; the difficulty of keeping them in a perfectly rectilinear position; and the chumines of appearance which they constantly, in some degree, exhibit, when made of the dimensions necessary for the proper extension of the trees.

The most usual modes of constructing such rails are two: first, the having upright splits of dressed timber funk into the ground, and morticed into a horizontal top-rail. This is greatly objectionable on account of the speedy decay, and from the splits always found giving way where funk into the ground, as well as from its being scarcely practicable to keep them straight. The second, or that which is the most generally practised, is to sink upright posts into flones, to mortice two crofs-bars into them, and to nail upright frills to the bars. The great defect in this mode is, that by the bulk of the posts, rails, and frills, so great a strain is thrown upon the flones during high winds, that they cannot long resist it; and the consequence is, that the rail soon begins to twist, while the part funk into the flones, in spite of every precaution, will at no great length of time decay, in consequence of moisture getting in between the wood and the flone.

In order to obviate these objections, the substitution of espalier rails formed of cast-iron instead of wood, has been proposed and tried with success by a gentleman in Dunbartonshire, Scotland.

Each portion of rail is formed of two rails inserted at the different ends into handsome upright columns or posts, having erect arrows or pieces fixed into them, somewhat in the manner of common iron paling, the whole height or portion resting upon three supports at the bottom, in the way directed below. The supports on which it stands are thus contrived: the centre one is a piece of seasoned oak, driven firmly into the ground, and funk a little below its surface. It receives the upright middle arrow-piece, which keeps up the centre of the bottom rail, and through which the different upright arrow-pieces to each side of it are put. It is supported below the rail by two pieces of the same metal in a triangular manner. Those at the ends are flones of two feet in length, having their tops hewn into an hemispherical shape, and perforated in the middle by a hole of four inches in depth, and two in diameter, which receives the bottom ends of the columns or posts. The upright arrow-pieces are each furnished with a ruff at the places where they meet the top and bottom rail.

The columns or posts have the length of six feet, their bottoms being funk, as above, into the flones: the diameter of them at the bottom rail is an inch and a half, and at the top, one inch and one-eighth; the upright arrow-pieces are five feet in length, and their diameter half an inch; the bottom rails are three-eighths of an inch in thickness, and in breadth.
The columns, at the parts where the rails enter them, have a flank projecting at right angles to them, with a hole, through which, and through a hole in the end of the rail, a leaden rivet is put, for fastening the rail to the column or post. See Treillage.

Tree, Onion, in Gardening, that fort of onion-plant which rises somewhat in the tree-like form, and which affords its produce or bulbs at the top of the item or flake. At what period this valuable and useful bulb-rooted plant was first introduced into this country, feems now to be quite uncertain; and it has never yet perhaps been grown or cultivated to any extent in any part, being mostly had in growth merely for the sake of curiosity. From a Paper inferted in the firft volume of the Memoirs of the Caledonian Horticultural Society, it would appear, however, to be capable of being raised with advantage as a substitute, in part, for onions of the keeping kind, as might have been supposed from the severe nature of the climate from which it originally came.

In addition to the little which has been said of the nature of its culture for the purposes of ornament and variety under the head Allium, (which see,) the following observations on its culinary use may be given in this place.

It is stated, on the experience of some years, in the Paper alluded to above, that the root-bulbs, when two years old, put up each a stem from thirty inches to three feet in height, on which good-sized bulbs are formed at top: that from these, others push out of a second flake; and that sometimes a third lift is produced, which are still smaller; but that the third and second stars are the only ones which are fit for planting. Towards the end of summer, the top-bulbs are in a proper flate for gathering, and should be collected carefully dried in a shady place, then put in a dry airy situation, until the leaflon for planting them out. This at the same time the old root-bulbs should be lifted, which have mostly one or two onions to each of them, which are of good quality, and keep well until late in the following spring leaflon.

About the laft week in the month of April is the most proper time for planting out the young top-bulbs for the purpose of a crop, as if sooner planted, they are apt to put that leaflon, and neither produce good root-bulbs nor top-bulbs. The old roots should be planted out any time in the month of February, or the following one, as early planting has the power of making them produce good bulbs at top. The young bulbs of the firfl flake should be separated and planted out in rows in any good garden ground, which is in an open situation, six inches by four: the second flake in rows six inches by three, in shallow drills of very little depth, as the swelling and ripening of the roots are spoiled when they are deep.

The whole of these will, it is said, produce onions of a good flake, which will keep, when well taken care of, until the middle of May. The old root-bulbs, when not all wanted for planting, will likewise keep equally well; and after a sufficent flock of them has been provided, the rest may be used with the other principal forts.

It is noticed that the old roots are the best for replanting for a crop of top-bulbs, as they are the molt certain of running to items.

The writer has never known these crops to be infelted with vermin in any flage of their growth; the reason of which is, it is thought, their quick growth and coming to maturity before the leaflon at which vermin commonly attack the usual spring-bulb roots, as it has been found that the late or autumn-bulb crops of the common kind, when allowed to stand for an over-year produce, are seldom or ever affected in this way, even on light dry ground.

This fort of onion, besides its property of long keeping, is a strong well-flavoured kind, equal, if not superior, to most of the common forts.

It is, however, perhaps the best calculated for private gardens, as requiring a good deal of attention, as in such, when once provided with a certain quantity of root-bulbs, the proprietors would be rendered independent of the failure of the crops of common onions; and it is confidently afferted, that if the cultivation of it were generally well understood, it would be capable of being grown with both pleasure and profit in a great many cafes.

Tree, Gelseminum. See Bocconia.
Tree, Cork. See Cork and Oak.
Tree, Chafta. See Agonis Cajuora.
Tree of Life, Arbor vita, in Botany. See Thuja.

The accidental, which grows naturally in Canada and other northern countries, is used, according to professor Kalm, for many medicinal purposes. It is much extolled for rheumatic pains; with this intention the fresh leaves are pounded in a mortar, and mixed with hog's grease, or any other grease; this is boiled together, till it becomes a froth, which is spread on linen, and applied to the part where the pain is. This froth gives certain relief in a short time.

Against violent pains which move up and down in the thighs, and sometimes spread all over the body, they recommend four-fifths of the leaves of polypody (polypodium frande pinnata, &c.) and one-fifth of the cones of the thuja, reduced separately to a coarse powder, and afterwards mixed. With this powder, and milk-warm water, they make a poultice, which they spread on linen, and wrap round the body; but they commonly lay a cloth between it and the body, otherwise it would burn and scorch the skin.

The decoction of thuja leaves is used as a remedy for the cough; and they use this at Saratoga for the intermittin fever.

Tree-Frog. See Ranunculus Viridis.
Tree, Germander. See Teucrium.
Tree, Mallow. See Lavatera.
Tree, Mealy, or White-leaf. See Wayfaring-Tree.
Tree-Moss, a species of Lieben; which fee.
Tree, Primrose. See Oenothera.
Tree-Loose. See Apist.
Tree, Diana's, in Chemistry. See Arbor.
Tree, Dormant. See Dormant.
Tree-Fold, in Sheep-farming, a term applied to that fort of sheep-fold which is formed or surrounded by trees in the growing flate, and which is well fitted for protecting them in certain exposed situations, as well as affording them other advantages. See Sheep.

Trees, in a Ship, are of several sorts, as chest-tree, cross-tree, roof-tree, waft-tree, trefoil-tree. See Chess-trees, &c.

Tree Island, in Geography, a small island in the Indian sea, near the coast of Africa. N. lat. 17° 10'. — Also, a small island in the East Indian sea, near the E. coast of Sumatra. S. lat. 3° 50'. E. long. 105° 51'. — Also, a small island near the W. coast of Sumatra. S. lat. 1° 58'. E. long. 106° 15'. — Also, an island in the bay of Bengal, near the coast of Ava. N. lat. 18° 12'. E. long. 94° 15'.

Tree-a-top Island, one of the Chusan islands, which undoubtedly deserted the appellation given to it, when it was first described by the Europeans above half a century ago, at which time they were permitted to trade to Chusan; but
but the tree is gone, and this island, which is as bare as those surrounding it, is only known by its relative position in the chart. To the southward of this island, about three or four miles, there is excellent anchorage in five or six fathoms water, where ships are sheltered from every wind.

TREE-NAILS, or TRENNELS, in a Ship, are long cylin-
drical wooden pins, employed to connect the planks of a ship's side and bottom to the corresponding timbers, and to fasten the anchor-flock.

The tree-nails are suitably esteemed superior to spike-nails or bolts, which are liable to rust and loosen, as well as to rot the timber: but it is necessary that the oak of which they are formed should be solid, close, and replete with gum, to prevent them from breaking and rotting in the ship's frame. They ought also to be well dried, so as to fill their holes when swelled with moisture. They have usually one inch in thickness in 100 feet in the vessel's length; so that the tree-nails of a ship that is 100 feet long, are one inch in diameter, and one inch and a half for a ship of 150 feet.

TREET, TRIFICUM, in our Statutes, is used for fine wheat. See lat. 51 Hen. III. Hence bread. See Bread.

TRE-PALLOW, To, in Husbandry, is to plough land the third time before sowing.

TREFFEN, in Geography, a river of Carinthia, which runs into the Drave, 6 miles below Villach.

TREFFORT, a town of France, in the department of the Ain; 7 miles N.E. of Bourg-en-Bresse. N. lat. 46° 16'. E. long. 5° 27'.

TREFFURT, a town of Weitphalia, in the territory of Eichsfeld; 10 miles W.S.W. of Muhlhausen.—Allo, a town of Germany, in the principality of Hesse-Rinflms, situated on a hill near the Werra; 36 miles E.S.E. of Caffel. N. lat. 51° 8'. E. long. 10° 18'.

TREFOIL, in Architecture, the usual mode of ornamenting an arch in the pointed style by the insertion of a cuff or point on each side of it. Other trefoils are incribed within a circle, and resemble a head of clover-grafs more perfectly.

TREFOIL, in Botany. See Trifolium.

Trefoil is a plant of the clover kind, which is not un-
frequently sown or met with in grafs-lands. It is always a
valuable plant in such grounds as are kept under a permanent
state of grafs; and not much lefs useful, when sown and
 cultivated in thofe of the arable kind. See Clover and Medicago Lupidina.

It succeeds well on foils of different descriptions, as on
thofe of the dry, loamy, and the calcareous kinds and qua-
litics. It was found to succeed perfectly on the itone-brash
kinds, by Mr. Davis, in Oxfordshire; and it has been
greatly advised for the chalky and some other dry forts, by
Mr. Boys of Kent. It is constantly known to anwer well
in all the lefs moist loams. It is a plant, however, which
has been objected to by some farmers, as being only a bienni-
al; but as it sheds its seeds annually in great abundance,
this is probably a matter of little confquence; and it is well
known to seldom wear out of lands, in which it has been
once well established. Its feed is readily procured, and
with little expence or trouble.

The plant is of much lefs growth than that of common
clover, being considerably flender in the item or stalk part;
yet notwithstanding this, it is not unfrequently found with
creep of the grain kinds, in the manner of that grafs-feed.
The proportion of feed, which is made ufe of in such cafes,
is ufually about three pottles, or two gallons, when per-
fectly cleared of the hulks; but when in the contrary flate,
two buhells are mostly the quantity that is fufficient for the
purpofe. These quantities should, however, be constantly
varied, according to the nature, circumstances, and condi-
tions of the lands.

By fome it is fuppofed to be a beneficial practice to fow
it in these ways, efpecially where large flocks of animals are
kept; as with the oats or wheats in the fpring feafon, when
they are to be followed with grain in the next; as, by this
means, good feed is provided in the burlies for the flock,
in the latter part of the fummer and in the autumnal months,
while, at the fame time, the land is left free for the pur-
pofes of tillage in the fpring. When it is employed in the
way of laying down land for paflure, as it is always of
much importance to the farmer to have fuch land to produce
a full crop the firft year, this is proper; and as there are
fome grafs-plants which require two or more years to es-
tablish themselves, and acquire their full growth, while
others arrive at their extreme and perfect size and expansion
the firft year after being fown; fome of the latter foft should
conftantly be had recourse to, among which this fhould
never be neglected, as it is found, in moft cafes, to be
highly valuable and ufeful in fuch circumstances. Hence,
too, the advantage of mixing it with other fown grafs-feeds
is fhewn in different inftances. Some farmers confider
the quantity of four pounds of trefoil-feed to the acre as too
small a proportion; and think it an improvement to either
double the quantity, or to add as much red clover-feed,
which is probably the preferable method. In this quantity,
it is fuppoled, they will not injure the other grafs-feeds
which may be fown at the fame time, but furnifh a copious
vegetation, until the other may come to perfection; at
which period, both the trefoil and clover have a natural ten-
dency to disappear and be worn out of the land.

Trefoil is laid to produce excellent paflurage for cattle-
flock, but to be more particularly calculated for sheep,
when either in mixture with clover or alone, as it is found
not to be fo liable to hurt them by dwelling or fowing them
as clover. It is of great importance in the feeding and sup-
port of sheep, in confquence of its being more early than
clover, and its coming in well after the confumption of the
rye and turnip crops, before the clovers become ready in the
fpring feafon.

The writer of the "Experienced Farmer" rates, that this,
by fome, is fuppoled a bitter plant, and that sheep are not
fond of it, but that he muft own that nothing within the
comps of his experience has led him to form such an
opinion. It vegetates about a month earlier than white
clover, and long before the rye-grafs is exhausted. But it
is thought improper for being sown alone, except for the
express purpofe of raifing feed. There are no foils, it is
thought, proper for trefoil but what are capable of pro-
ducing rye-grafs and white clover. Hay made from
this plant alone, is a pretty hay, but fedlom abundant in
produce. It is conceived that more trefoil is capable of
being raised on any fort of land, in any quantity, by fowing
rye-grafs among it, than without; as it has been obferved
that trefoil, like the vine and pea, wants support from fome
stronger material to which it may cling. For this reafon it
prospers well with red clover, round which its tendrils twine
as woodbine in a thorn-hedge. It is believed, too, that the
crop of clover will be very little lefs in quantity or weight
from the trefoil growing in a flate of mixture with it.

The after-grafs of trefoil is confidered as not worth much,
and which account fome recommend it to be followed with
wheat, but it can be declared on the grounds of confitant
experience, that land intended for wheat, cannot pollfibly
be
be too much smothered with crops of every sort of the clofe-growing shady kinds.

It has been flated by a late writer, that upon light and poor fandy soils, or lands on which clover does not succeed well, it is common husbandry to sow trefoil with a portion of white clover and ryegrass, with the intention of leaving it two years. In this cafe, six pounds of trefoil, four of white clover, and half a buffel of ryegrass feeds are the common quantities. These are with the intention of providing fleec-feed.

Where trefoil is left for hay, it does not afford a large produce, but a fort which is highly useful and advantageous as a fheep-fodder in the winter feafon, and left wallful than molt other kinds, when used in that way. At the fame time, it is supposed to be fels troublesome in the process of making into hay. However, it is affected by Mr. Kent that it readily runs together, and becomes mouldy by wet.

The feed is to be collected from the fecond shoot, in the fame manner as in common clover, the produce being in general from six to eight buffels of clear feed from the acre. In diffrits where it is grown for the feed, the crops are mown in the beginning of July; the heads or huks being often threfhed off the fraw in the field on a cloth, and then fold by the quarter to thofe who have mills and collect them, who grind the feed out of the huks, and then difpofe of it to others, in different places, for theufe of the farmers in thofe diffrits where it is rarely faved. The acre moftly proceeds from about four or five to ten quarters in the hulk, each of which affords about two buffels of clean feed when grown solely in this intention.

This plant has often the names of black-grafs, nonefuch, yellow clover, and others, given it by writers on husbandry.

There are other different forts or varieties of this plant occasionally cultivated by the farmer, fuch as the trefoil termed bird’s-foot, which has been found ufeful when cultivated in meadows that are inclined to be moif, as growing to a great height, and affording an excellent hay. In fome places too it is ranked as paflurage for fheep. Alfo the trefoil called by the name of hop, which is often confounded with the red trefoil, as being nearly of the fame duration, but which is more grateful to animals. The trefoils feem, on the whole, not to be fo much difcriminated by agricultural writers, as their importance as artificial grades would appear to demand. Befides, much confusion is introduced in confequence of the diversity of their provincial titles. It has been remarked, that as fome are annual, fome biennial, and others perennial, where the two former forts are fown where it is intended to have a permanent paflure, disappointment muit of necefly be the confequence.

Trefoil, Bean, a fpecies of Cytifus; which fee. Trefoil, Stinking Bean. See Anagyris. Trefoil, Bird’s-foot. See Lotus.

The fruit of the lotus was, by the ancients, imagined to be endowed with the virtue of making ftrangers forget their native country.


The fecond fpecies of this genus, or the ptelea with fingle leaves, was formerly thewn for the tea-tree in many of the European gardens, where it many years paffed for it among thofe who knew no better.


The ancient botanists feem to have been acquainted with two very different shrubs under the name cytifus; and there have been no small errors about the true meaning of several passages in Dioscorides and Theophratus, on occasion of the mitaking one of these things for another. Dioscorides describes the cytifus, as being a shrub with leaves white and hoary, both on the upper and under fide, and of no ufe, or value, to mankind: as to its wood, Pliny translates this account, and adds to it from Hyginus, that it was a very hardy and strong shrub, not being affected by heat or cold, snow or hail, or any other injuries of the weather, nor of its enemies, as Pliny expreffes it (bofium).

It is not very easy to conceive what enemies these fhould be; but the moft probable conjecture, as to this odd paflage, is, that Pliny had tranfcribed it in his ufual carelfs way, and that what is called bofium, fhould be the word noftrum.

The fenfe then is clear enough; the author had juft before said that the wood was good for no ufe to mankind; and, therefore, when he was speaking of the trees standing a long time, and fearing the injuries of no weather, he might very well add, nor of us; for the wood being good for nothing, men would not be at the trouble of cutting it up. It is plain, however, that Theophratus means quite a different shrub by this name cytifus; for, as Dioscorides fays, that the wood of his was white throughout, and very light.

Theophratus observes, that it was black at the heart, and as heavy and folid as ebony; and, in many places, where he speaks of the hard and elegant woods used for inlaying, he mentions the cytifus wood, coupling it with the ebony, heart of oak, and other the hardeft and moft elegant woods known in his time.

Pliny mentions no other cytifus than that of Dioscorides, which was the common kind cultivated by the Greeks and Romans, as a food for cattle; he fays it was raised by feed, and came to its perfection in three years, and that it was gathered in the spring juft after the time of its flowering; he adds, that this was usually the office of children, or old women, unfit for other work, and was the cheapest of all the offices of husbandry. It is easy to conceive, that such a shrub as the cytifus of Theophratus, with a wood as firm as the heart of oak, and hard as ebony, did not come to perfection in three years from the fowing: nor could any more be cut up by boys and old women, than eaten by cattle when taken up. There were, therefore, two kinds of cytifus among the ancients, the one fown and cultivated as food for cattle, the other a wild tree, or shrub, growing in woods, and being larger than the fown kind.

Dioscorides and Pliny defcribe the fift, and Theophratus alone the latter, except that Pliny has now and then taken a fentence from Theophratus, when he mentions the cytifus occasionally among other hard woods, and placed it to the account of his manured cytifus.

Ovid, indeed, where he mentions the cytifus as a wild wood shrub, certainly means this kind mentioned by Theophratus:

"Nec tenuis cytifus curtive tinus abel."

And Columella acknowledges both kinds. It may feem a natural objection, that culture could never make fuch a difference in this plant, as that it fhould be hard and black in the wood in its wild state, and foft and white in the cultivated kind. But we are not to fancy that the cultivated and wild cytifus were the fame fpecies of shrub, only altered by these two flates. The ancients were not fo accurate in their names as later botanical writers have been; and if a wood-shrub, in some refpecfs, remembred their manured cytifus, they would call it by that name, though it had
Trefumel, in Geography, a town of France, in the department of the North Coasts; 6 miles S. of Dinan.

Tregarow, or Tregarow, or Caron, a small market-town in the hundred of Pen-arth, and county of Cardigan, South Wales; is situated in a valley watered by the river Berwyn, a contributory stream to the Teifi; 18 miles S. by E. from Aberystwyth, and 170 miles W. from London. It was formerly a corporate town, but for some improper conduct at the election of a member to serve in parliament in the year 1742, the house of commons voted that the corporation had forfeited their charter. A weekly market is held on Tuesday, and an annual fair of three days' continuance in March. The church, which is a spacious structure of very rude masonry, consists of a nave and chancel; it stands on a rocky eminence, regularly circular, and forming an elevated centre to the town. In the churchyard are the remains of a Druidical circle, with the faces filled up with stone-walling. The parish of Tregaron, which extends nine miles in length, and four miles in breadth, comprehends eight parishes or townships, and, according to the population return of the year 1811, contained 244 houses, and 1133 inhabitants. At a place called Caithell Flemys, in this parish, is a very large intrenchment of a semi-circular form, well defended on three sides by a moat. On a hill called Penhirwul are three heaps of stones, called Carneddau, sepulchral monuments of Druidical origin; and a bank of raised earth runs in a straight line for several miles, in this parish as well as that of G-wanns, and is said to lead into the sea, called "the furrow of Bannoy's oxen," the same as were said to be employed in building the church of Llandre Bwth. But it is probably the remains of an old British road. Thomas Jones, an eminent antiquary and poet, who lived at the end of the sixteenth century, was a native of Tregaron.—Malkins's Scenery, &c. of South Wales, 2 vols. 8vo. 1807. Carlisle's Topographical Dictionary of Wales. Beauties of England and Wales, vol. xviii. South Wales; by the Rev. T. Rees. Meyrick's History and Antiquities of the County of Cardigan, 4to. 1808.

Tregiano, a town of Naples, in the province of Barò; 6 miles E.S.E. of Bitteto.

Tregony, a market-town and borough in the western division of the hundred of Powder, and county of Cornwall, England; is situated on the river Fal, 8 miles E. from Truro, 40 miles S.W. from Launceston, and 250 miles S.W. by W. from London. This town was formerly a place of some consequence, but fell to decay when Truro began to flourish, and attract its trade and population. Tregony sent two members to parliament in the reign of Edward I.; and after a long dispute, recovered its ancient privilege in the year 1559; the right of election is vested in the housekeepers: the number of voters who polled in the year 1812 was 183, the exact number of houses returned under the population act of 1811; the number of inhabitants were therein stated to be 923. The town confounds principally of one long street. It was anciently governed by a portreeve, or mayor; but in the year 1620, king James I. granted it a charter of incorporation. The market, which is on Saturday, is held by precepture: Henry de Pomeroy certified his right to it in the reign of Edward I. Henry III. granted a fair to the said Henry in the year 1260. Here are now five fairs. Both the fairs and market have for many years been in a declining state; till the middle of the last century, they were very considerable, and particularly noted for the sale of woollen cloth, of which there was an extensive manufactury in the town. Tregony castle, of which there are now no remains, is said to have been built by Henry de Pomeroy at the time king Richard I. was in the Holy Land; it was standing, and was the seat of the Pomeroy's, in the reign of Edward VI. In the year 1666, Hugh Boscawen founded an hospital for decayed housekeepers, and endowed it with lands, now let at 30s. per annum, but capable of being soon raised to three times that value. On the north side of the town flood, what is called, Old Tregony, where was a church dedicated to St. James, the walls of which were standing till about the middle of the last century.

On the opposite bank of the Fal, is Trewarthienick, the seat of Francis Gregor, esq. The house is seated on an elevated piece of ground, abounding with fine groves, and commanding a variety of interesting prospects.

About two miles south-west of Tregony, is Ruam Lanihorne, a village seated on the banks of the Fal, of which the Rev. John Whitaker, the learned historian of Manchester, was nearly forty years the resident rector. He died Nov. 4, 1808, in the 73rd year of his age, and lies buried within the walls of the communion-table.—Lyfons's Magna Britannia, vol. iii. Cornwall, 1814. Beauties of England and Wales, vol. ii. Cornwall; by J. Britton and E. W. Brayley, 1822.

Treguier, a see-port town of France, in the department of the North Coasts, on a peninsula, near the English Channel; before the revolution the see of a bishop; 9 miles N.E. of Lannion. N. lat. 48° 47'. W. long. 3° 8'.—Alfo, a river of France, which runs into the English Channel, 6 miles N. of Treguier. N. lat. 48° 51'. W. long. 3° 8'.

Trelaw, in Ancient Geography, a town of Italy, in Piccium, S.E. of Cingulum.

Trelaw, in Geography, a town of the Popedom, in the marquefeate of Ancona; 6 miles W. of Macerata.

Tregignac, a town of France, in the department of the Correze; 16 miles N. of Tulle.

Tregigny, a town of France, in the department of the Yonne; 9 miles S.E. of St. Fargeau.

Treillage, in Gardening, a fort of rail-work consisting of ranges of light poll and railings, for the purpose of training espalier trees to, and occasionally for wall-trees, where the walls do not admit of nailing the branches immediately against them; likewise for training wall-trees in forcing-frames, &c. They are made in different ways for use and ornament, as well as of different dimensions, from four or five to six or seven feet high.

For common espalier fruit-trees in the open ground they are absolutely necessary, and may either be formed of common stakes and rails nailed together, or of regular joinery work.

The cheapeft and the eafteft, and fooneft made treillage for common espalier trees, is that formed with any kind of fraight poles or staves of under-wod, as cut in the coping pieces, being then cut into proper lengths, and driven into the ground in a range at distances of a foot each, all of an equal height, and then nailed along the top with the fame kind of poles, to preserve the whole fraight and firm in a regular position. See Espalier.

And to render these flill stronger, two or three horizontal ranges of rods may be nailed along the back part of the uprights, a foot or eighteen inches aunder.

The more elegant and ornamental trealgages are formed with regularly squared poles and rails of hard timber, neatly planed and framed together; having for this purpose deal or oak poles, uniformly worked two or three inches square; but if the main poles are of oak, it will be of advantage
vantage in respect to strength and durability; fixing the
main poles in the ground ten or twelve feet afunder, with
smaller ones between, ranging the horizontal railings from
pole to pole in three or more ranges; the first about a foot
from the bottom, a second at top, and one or two along the
middle space, and, if convenient, one between each of the
intermediate spaces; then fixing thin slips of lath, or the
like, upright to the horizontal railing as far as the branches
of the trees extend, ten inches or a foot afunder; and paint-
ing the whole white in oil colour, to render it more orna-
mental and durable. In training the trees, their branches
are tied both to the railing of the treillage and the upright
laths, according as they extend in length on each side. In

either of the above cases, for an epailer, five feet are gen-
erally of sufficient height, as, if much higher, the winds,
having greater power, will loosen and displace them.

Where walls are built with large stones with the joints
irregular and far afunder, and which do not afford oppor-
tunities, like brick-walls, for nailing properly in the re-
gularity which is required, a neat treillage is sometimes
uniformly erected all along close to the wall, to train and
nail the branches to in a regular manner.

These may be made of coarse pieces of battens, railings,
&c. or of such as are wrought in a neat manner, according
to the convenience and taste of the person who has them.

In constructing trellisages of this nature, some make them
with clean straight rods or poles, and others with squared
laths, which are an inch and a half in thickness; each of
which sorts of materials answers the purpose very well. In
performing the business, the workmen, as soon as they have
provided themselves with a sufficient quantity of either
of these kinds of articles, and a proper supply of hooked iron
hold-fails, first drive some of the hold-fails into the
joints of the walls in rows as much as possible at regular
distances, which are left projecting about an inch or inch
and half from it, in order to receive the rods or laths in
both a horizontal and perpendicular direction, at nine or ten
inches from each other, fixing in the first row of these
hold-fails towards the top or upper part of the walls, the
second near to the bottom, and the third all along the mid-

dle space. When this has been accomplished, and the rods
or laths are in readiness, the latter of which may, if thought
necessary, be squared and planed to the place, they begin to
proceed to the framing of the treillage, by first fixing the
rods horizontally in three rows, in the three ranges of hooks
as above, taking care that these horizontal rods be pre-
viously chopp'd off to nothing at each end, in order that
they may be readily slipped to each other to extend them in
length as far as it may be requisite. Having thus fixed up
the first three rows of horizontal poles, some uprights or
standard rods are latticed up in the front of the horizontal
poles, at the distance of five or six feet, after which the re-
mannder of the horizontal laths are ranged behind the stand-
ards, nine or ten inches afunder, latticing them with wire to
the uprights, when they being all thus placed and fixed,
the rest of the standards are latticed up in front at the
same distance, the whole being made perfectly fast with
wire twisted round the hooks, and the crossbars or inter-
sections of the rods of the treillage or frame-work. Where
square laths are employed for this purpose, they are usu-
ally about an inch and half in the square, being planed quite
even and smooth, and then framed together in a neat manner
by proper mortises, and fixed up with strong hooks and nails.

Either of these kinds of trellisages, when finished and fixed
up, should be well painted over with white lead paint, in
order to render them more lasting and handsome.

In frames and lattices where wall-trees are intended for
forcing, as they are planted both against the back wall, and
occasionally in a detached low range forward towards the
middle or front space; trellisages are indispensible neces-
ary upon which to arrange the branches of the trees in a regular
expansion, not to train them immediately close to the wall
of the flues of that department, but detached several inches,
and formed with light neat squared upright battens, and
small horizontal rails, uniformly framed together, in a light
open manner. See Trees, Epailier, Catted iron rails for.

TREISENFELD, in Geography, a town of Germany, in
the principality of Cullmbach ; 8 miles S.E. of Bayrenth.
TREISH, a town of France, in the department of
the Sarre, on the Moselle ; 19 miles S.W. of Coblenz.
TREIZIÈME, Fr. in Mijoc, is the oétave of the 6th,
or the 6th of the octave; and is called in English the 13th,
from its containing twelve diatonic degrees, that is to say,
thirteen founds.

TRELAWNY, in Geography, a town of Jamaica, and
chief town of the Morors; 60 miles N.W. of Kingston.
N. lat. 18° 21'. W. long. 74° 42'.
TRELAZE, a town of France, in the department of
the Mayne and Loire; 3 miles E.S.E. of Angers.
TRELECH, a town of England, in the county of
Monmouth; 5 miles S. of Monmouth.
TRELLIS, or Treillis, in Gardening, a term some-
times employed to signify the name as treillage, or a slave
and less strong fort of wooden frame-work of this nature,
which is sometimes used in particular situations and circum-
stances. See Treillage.

TRELON, in Geography, a town of France, in the de-
partment of the North; 9 miles S.E. of Avesnes.
TRELOOBING, in Mining, denotes a flitting
and working the loobs or fliny earth of tin, &c. in a lime-pit,
that the mud may be partly washed off with the water, and
the ore settle at bottom.

TRELOU, in Geography, a town of France, in the de-
partment of the Aline, on the Marne; 9 miles E. of
Chateau Thierry.

TREMA, in Botany, from Τραμα, τραματις, a hole, alluding
to the perforations in the shell of the nut.—Lourcq.
Cochinch. s.62.—Clays and order, Monocotian Pentalndia.
Gen. Ch. Male, Cal. Perianth of five lanceolate spreading
leaves. Cor. none. Stam. Filaments five, longer than the
calyx; anthers roundish.

Female, on the same plant, above the male, Cal. as in the
male, permanent. Cor. none. Pjfl. German superior,
roundish, deprest; style none; stigmata two, short,
filamentous. Peric. Drupa roundish, somewhat deprest,
ingleeved. Seed. Nut minute, pierced with several holes.
Female, Calyx of five leaves. Corolla none. Stigmata
two. Drupa superior, roundish, with a perforated nut.

—Native of the woods of Cochinchina. A tree of mid-
dling hie, with a filamentous bark, and ascending branches.
Leaves alternate, ovato-lanceolate with a long point,
ferrated, downy. Flowers on axillary branched flarks.
Drupa yellow.—We know nothing of this plant but from
the above description.

TREMANDREÆ, a new natural order of plants,
pointed out by Mr. Brown in his truly excellent and in-
structive "Remarks on the Botany of Terra Australis,"
published at the end of captain Flinders's Voyage. This
order is founded on the genus Tetraphtha, (fee that arti-
cle,) and another from the same country, named by Mr.
Brown Tremandra, apparently from Τραμα, a perforation, and
ανεσ, a man, because of the pores of the anthers. The cha-
acters of the order are thus given.

Calyx

Geography,
Calyx of four or five equal leaves, overlapping each other in the bud. Petals four or five, equal, involute, and enfolding the flamen, before expansion. Stamens eight or ten, below the germin, distinct; anthers attached by their base, of two or four cells, burnishing by either a tube or pore at the summit. Germin (superior) of two cells, with one to three pendulous seeds in each; style one; stigmas one or two. Carpels of two cells, and two valves, with partitions from their centres. Seeds albuminous, with a naked fcar, and an appendage at the opposite extremity; embryo in the axis of the flchy albumen, and half as long again; radicle directed towards the scar. The plants are humble shrubs, rehneling Erica, with either scattered or whorled leaves, definite of stipulas. Their flowers axillary, and single-flowered.

Mr. Brown prefers the name he has chosen for this order to one derived, as it ought in right of priority to be, from Tetratheca; because it better describes the structure of the flamen in both genera: the four distinct cells not existing in the ripe slate of the anthers of Tremandra, nor even of all the species of Tetratheca. We are well aware of the truth of his alteration, that bilocular anthers in general have each cell divided by the inflexed valves, till they burst, being while young truly quadrilocular. We were however of opinion, in founding the genus Tetratheca, that the four cells being permanent, afforded an excellent name, as well as character. If this character does not exist in every species, it may be less important; but that it is not found in Tremandra, surely renders it the more descriptive of Tetratheca.

Mr. Brown proceeds to remark, that the writer of this, like Labillardiere, has mistaken the fungous appendage to the apex of the seed for an umbilical caruncule, or appendage to the scar; hence one end of the seeds was taken for the other, and they were supposed erect, not pendulous; Labillardiere moreover was thus led to conceive that the radicle pointed towards the scar.

The Tremandras, as Mr. Brown observes, are nearly related to Polygala, but he eels them sufficiently distinct from the latter, not only in the regularity of the flower, and structure of the anther, but in the activation, or manner of folding, of both calyx and corolla; in the appendage of the seed being at its apex; and, it may be added, in the tendency to produce an indefinite number of seeds in each cell. We would rather confde it than dilate the number of natural orders, as well as genera, and with respect to the first reason of our learned friend, we would recall a remark of the fagacious Correa, that every natural order contains some regular and some irregular-flowered genera. The different activation is perhaps a necessary consequence of the last-mentioned difference. The other characters are fully of small account in this cafe.

"The greater number of Tremandras are found in the principal parallel of New Holland. They extend alfo to the south end of Van Diemen's infern, but none have been observed within the tropic."

TREMBLAGE, in Geography, a town of France, in the department of the Lower Charente; 3 miles S. of Marenses.

TREMBLANT, in Mufic, the name of a very disagreeable fap in large church-organs on the continent. Its name describes its effect. In general, a feedy tone in a voice or wind-instrument capable of fultaining a note, is the most effential requisite; but in the tremblant fap there is a perpetual quivering, such as we sometimes hear in the streets by the vielle and barrel-organ. See ORGAN.

TREMBLAY, Le, in Geography, a town of France, in the department of the Mayenne and Loire; 18 miles N.E. of Angers.

TREMBLAY le Violent, Le, a town of France, in the department of the Eure and Loire; 7 miles S. of Dreux.

TREMBLEMENT, in French Mufic, is equal to trills in Italian, and cadence in old French music: they all mean the same thing, which in English is a shake.

TREMBELEY, Abraham, in Biography, an eminent naturalist, was born at Geneva in 1710, and having finished his own education in Holland, he undertook that of the children of M. Bentinck. He then went to London, and had the charge of the young duke of Richmond. In the course of these employments he travelled into various parts, and directed his attention to various objects, particularly of natural history. His discovery with regard to the propagation of the fresh-water polypes (see POLYPE), engaged general attention, and he gave an account of it in his work printed at Leyden in 1744, and entitled "Memoire pour servir à l'Histoire Naturelle d'un Genre de Polypes d'eau douce un Bras en Forme de Cornes." His papers on other subjects of natural philosophy, as electricity, geology, &c., are printed in the Transactions of the Royal Society, of which he was a member. In 1757, upon his return to Geneva, he became a member of the Grand Council, and his conduct as a citizen contributed no less to his reputation, than his researches and discoveries as a philosopher. Having the superintendence of a granary, he made some useful observations on the infefts that destroy corn, and the mode of counteracting the injury they occasion. To the young he was a pleasing inftuctor, adapting his mode of conveying useful knowledge to their years and capacities. With this view he published "Instructions d'un Père à ses Enfans sur la Nature et la Religion," 2 vols. 8vo. 1775; "Instructions d'un Père à ses Enfans sur la Religion Naturelle et Révélée;" 3 vols. 8vo. 1775; and "Instructions d'un Père à ses Enfans sur le Prince de la Religion, et du Bonheur," 8vo. 1782. This excellent perfon died at Geneva, highly esteemed and respected, in 1784. Haller. TTBREMLING, POPULAR, in Planting, a name often applied to the aspen-tree. See POPULAR-Tree and POPULUS.

TREMBLING-ILL, a difafe in sheep, which often produces great loss among lambs. It is an affection of the paralytic kind, which is sometimes lingering, but at others so speedy, that the animals are not unfrequently dead before it is suspected. Walking in cold water has been found useful. See THWARTER or LOSING-ILL.

TREMBLOWA, in Geography, a town of Austrian Poland; 16 miles S. of Tarnopol.

TREMECEN, or TLEMSN, a city of Algiers, and capital of the western division, which is governed by a bey or viceroy; situated on a rising ground, below some rocky precipices, from which issue a number of springs. In the well part of the city is a large square basin, of Moorish workmanship, 200 yards long, and about half as broad. Most of the walls of Tremecen have been built or rather moulded in frames, a method of building used by the Africans and Spaniards. The mortar of which they confit, is made up of sand, lime, and gravel; which, by being at fir on well tempered and wrought together, has attained a strength and solidity not inferior to stone. About the year 1670, Hassan, then bey of Algiers, laid most of this city in ruins, as a punishment for the disaffection of the inhabitants; so that there is not remaining above one-sixth part of the old Tremecen, which, when entire, might have been four miles in circuit. Among the easterm part of these ruins we meet with several shafts of pillars, and other fragments, of Roman antiquities; and in the walls of a mosque, made out of these old materials, we have a number of altars, dedicated to the Dii Manes; 50 miles S. W. of Oran. N. lat. 35° 1'; W. long. 0° 28'.

TREMELLA, in Botany, so called by Dillenius, from tremo, to tremble, or quake, because of its gelatinous, tender
Illufr. t. 881. Perff. Fung. 622.—Clafs and order, Cryp-
Other ambiguus. Sm. Fung. Perff.

Efl. Ch. Fructification scarcely perceptible, in a mem-
branous, gelatinous, expanded, undulated subftance.

Nothing is more uncertain than the generic character,
and even the natural order, of Tremella. The genus feems
made up of various gelatinous productions, in which no
traces of fructification have been detected. Having no
shields, tuberces or warts, they could not be referred to
Lichen or its allies; neither have they feeds imbedded
throughout their subftance, to make them Uleas; much les
any aggregated feeds with or without a perceptible pericarp,
as in Ficus. They moreover differ from both the latter
genera, in not being submered Alge; for the aquatic speceis
are, as Roth and Perfoon observe, much better excluded.
The abie cryptogamift laft named refers Tremella to the
order of Fungi; but without any attempt to shew that they
produce powdery feeds from the surface of a hynenium, or
superficial membrane, a most material character of such
Fungi (fee that article) as have not a real pericarp with nu-
merous enclosed feeds. Their habit indeed is essentially dif-
terent. They are repeatedly revivificent by means of mois-
ture, thriving in a wet atmoflphere only, though not living
immered in water. In these particulars they agree exactly
with the Lichenes, not with genuine Fungi; which laft,
though they generally thrive in humidty, are scarcely re-
revivificent after having been once dried up.—The various
speceis, of which Perfoon defines twenty-four, are generally
parafitical, on the bark or branches of living trees, or on
dead wood. We doubt the reality of several, which appear
to us mere gummy exudations of the plants on which they
are found. This will prettily form a fubjeft of enquiiry.
We propofe to detail all the Britifh speceis, real or suppozed,
along with any exotic ones that feem particularly worthy of
notice.

We are not much fatified with Perfoon's fectiuns of this
genus, nor do we think it advisable to adopt them here, on
account of the uncertainties above-mentioned. Our deter-
mination does not arise from any difrepute for that excellent
author, one of the moft methodical and accurate in this ob-
ferve and much neglected path.

t. 13. T. juniperina; Hudf. n. 1. Nolocoeiium, mefen-
teris formis; Vaill. Parif. t. 14. f. 4.)—Seffile, plaited,
plaited, lobed, waved, orange-coloured.—Found in rainy
weather in the autumn and spring, on dead branches of oak
and other trees, or on decayed stems of broom or furze;
never on living wood or bark. This very flirking and con-
spicuous speceis forms cluf ters of various dimensions, from
one to four inches broad, of a rich orange hue, more or
less lef soft; when young pale or white. The subftance is
soft and flexible, neither vifcid, nor very tender. In dry
weather, or after being gathered, it shrinks, becomes hard,
and assumes a dirty brown colour; but revives in moifture.

Little taste or smell is perceptible in any part, nor has any
flign of fructification been discovered. Yet the plant ap-
ppears to be annual, and consequently must be propagated
by feed.

et Debr. Fung. 33. t. 8. f. 9.—"Convoluted, extremely
soft, delicatelyfcent, pale yellow."—Obferved by Perfoon on
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the branches of beech in autumn, but rarely. Half an inch
broad, and of a fofter subftance than the foregoing. We
are unacquainted with this speceis.

T. perficilis. Perennial Purplift Tremella. Bulliard
Fung. v. i. 223. t. 304.—Horizontal, leafy, somewhat
coraceous, smooth, undulated, pale violet.—Foun d on the
Stems of the Savine, Juniperus Sabina, according to Bulliard,
laving for a number of fuccedent years. When dried up it
is hardly diftinguifhable from the black Stems of the bark;
but in very muft or rainy weather it appears in the form of
horifontal leaves, half an inch or more in length, bluntly
rounded and lobed, of a pale vinous purple. Bulliard.

t. 1452.—Seffile, clustered, lobed, waved, of a rufly-brown;
the surface finely pubdecent.—Obferved by the late Mr.
Crowe, at Lakenham, near Norwich, growing on dead
wood, in wet weather in winter, compofing plaited convex-
luted tufts, three or four inches broad, pliable and tender,
flirved and flafeleps when dry, reviving imperfectly with
moifure. The fegments are rounded and waved, not lobed
or notched; their colour a rich brown, white within; the
surface finely downy, or rather covered with pale veftic-like
granulations, interfefted with brown irregular fpecks, more
like fructification than any thing else that has fallen under
our notice in this genus, except perhaps what Bulliard de-
cribes in the following speceis.

T. verticalis. Upright Dark-purple Tremella. Bulliard
Fung. v. i. t. 272. (T. mefenteriformis violacea; Ibid.
v. i. 230. t. 499. f. 6, X. Y.)—Cluf tered, cref, lobed, in-
uated and plaited, smooth.—Found on decayed tufts of
trees in autumn. Of a vinous violet-colour when young;
afterwards of a blackifh red-brown. It always grows cref,
from one to four inches high, gelatinous and latticd,
shining in between the teeth. Laid when fresh on glafs or
white paper, it difchars from every point of its surface a very
fine powder, supposed to be the feeds. This answcrs to the
nature of Fungi, and high microfco pic examinations are
requifite to determine how these feeds are produced; whether
in feies of eight together, from cells of the upper surface,
as in Fuxia, fee that article; or in a lefs regular manner,
from pores of the hynenium inviolating the under surface.
Bulliard has finallly reduced the prefent speceis to a variety
of his mefenteriformis; but it is fully very diflimit in many
efificant points from our mefenterica, and we cannot but
fuspect him to have here confounded feveral things together.
His original verticalis is faid to be valuable for its colouring
principle. When boiled in water for many hours, by which
the form and colour of the plant are not altered, it yields a
deep brown, likely to be ufeful in dyeing. For limning,
Bulliard obtained by infufion of this Tremella in fimple
water, a fub reffidu bifro-colour, very durable, and pre-
ferrable to any that he could buy in the fhop.

t. 1870.—Seffile, clustered, tufted, tumid, brown, thining
and gelatinous; when dry thin and membranous.—Gathered
by Mr. W. Borrer, in January 1807, on a beech in St.
Leonard's forest, Suffex. This conflits of roundifh soft pulpy
maffes, two or three inches broad, convoided and inflated,
like the intestines of some animal, of a darkifh, dull, not
red, brown; but with a thinning vefted surface, obfcurely
dotted. When cut, brown veftical freaks are obfervable a
little way into the subftance, which may contain the feeds,
though none have as yet been defcovered.

—Seffile, clustered, tufted, black, opaque, internally flicy,
deep purple.—Found by Mr. C. E. Soverby, on pale and
rails in Surry, early in June. This grows leflile, on ex-
posed
TREMELLA.

dulosa; Bulliard Fung. v. 1. 220. t. 420. f. 1.) T. arborea nigricans, minus pinguis et fugax; Dill. Mucf. 54. t. 10. f. 15.)—Selfile, gelatinous, roundish, undulated, blackish, befted with mammillary white-headed procefses on the upper side.—Common in autumn and winter on the decayed trunks of trees, and dead ficks, efpecially the Alder. The En-

ligh name, according to Dillenius, arose from the plant being suppofed efficacious againft witchcraft, when thrown into the fire. It confists of roundish, unequal, lobed, indeter-
minate fasses, moft corrugated beneath, farcely elevated on any fhalk, of a brown pulpy fubftance, becoming darker by age, from two lines to half an inch thick; the upper fide bearing fhort fcarced black prominences, each with a little white head.

T. boletiformis. Brown Rough-backed Tremella. Engl. Bot. t. 1819.—Nearly felfile, fcarceloft, roundish, depreffed, brown; smooth and fhining above; rough and dotted bene-

ath.—Found scattered over the dead branches of trees; in Suffix by Mr. W. Borrcr, and in Norfolk by Mr. W. J. Hooker. Each plant is nearly felfile, irregularly orbicular, depreffed, all over of a duff paleumber-brown; unequal, smooth and polished above; rough with prominent points beneath, whence the edges feme crenta. The diameter is from half an inch to an inch.


Bulliard Fung. v. 1. 221. t. 386.)—Selfile, dilated, ob-
tufe, whifh or somewhat brownish, pulpy, femi-pellucid.

—Found on dead or rotten wood, in fhady situations, burfting through cracks in the bark, and compoing ho-

rizontal, rounded, convoluted fasses, white and extremely tender, often very like the brain of an animal. Bulliard fays, a plate of glafs, on which the plant is laid, becomes covered with its powdery feeds. Such Mr. Sowerby found imbedded in the fubftance of the frond, forming round blackifh fasses. This fhould make it an Ulva. There are yellow, brown, or blackifh varieties. The whole require further investigation.


Hudfl. 564. Engl. Bot. t. 461. (T. terrestris fimooa, pinguis et fugax; Dill. Mucf. 52. t. 10. f. 14. Ulva terrestris pinguis et fugax; Dill. in Rau Syn. 64.)—Selfile, roundifh, plaited, waved, of an olive-green. —This much controverted plant occurs after rainy weather in summer, on gravel walks, or in graffy pature, growing flietly attached to the ground. It generally fpreads two or three inches, being of a tender gelatinous fubftance, thin and smooth, variously dilated and timid, of a dull olive-green. When young, it is faid by Dillenius to be small and globular, or like little fefles; but its growth is very rapid, and its exiftence fhort.

We are not sure that it revives after being thrivelled and blackened by dry weather. The duration of the plant is therefore, in the ftriéft fene, annual, and yet we do not know any thing of the feeds. Roth, Perfon, and others elleem it an Ulva; an opinion we cannot refute, if we are unable to confirm it. The molt remarkable circumstances in the history of this vegetable, are its being miftaken by the vulgar for the remains of a Will-of-the-wisp, or fallen flar; and by fome philofophers for an animal production. The latter have been deceived by a fimilar fubftance, proved by Dr. Withering to be the remains of frozen frogs, or as fome fay, the skin and bones of thofe animals digorged by herons. Whether thref or the real plant were the object of examina-


Perf. n. 9. Bulliard Fung. t. 427. f. 2. Engl. Bot. t. 2447. (Peziza Auricula; Bulliard Fung. v. 1. 241. Agaricum auricule formz; Mich. Gen. 122. t. 66. f. 1.)—Selfile, leathery, reddifh-brown; rough beneath; tufted and plaited above, refigbling an ear.—Not rare upon roten elder-trees. Perfon fays he never found this fpecies in any other fitation. It forms large tufts of plaited and convo-

luted flefty cups, of a femi-transparent reddifh-brown; the inner or upper surface palef, smooth and fhining; the outer darkifh, opaque and roughiff. The piaits branch from the middle, fo as to convey an idea of the human ear; whether Jewifh, Pagan, or Chriftian, depends on the complexion or cleanliness of the prototype. Bulliard afferts the feeds to be difcharged from the upper surface entirely. If this be correeft, he is juftified in transferring the plant to

Peziza.
TREMELLIUS, Emanuel, in Biography, an excellent Hebrew scholar, was the son of a Jew at Ferrara, and born there about the year 1510. Having been converted to the Christian faith by cardinal Pole and M. Flaminio, he imbibed the principles of the Reformers, accompanied Peter Martyr, and refided for some time at Strasbourg. From Strasbourg he came to England in the reign of Edward VI., and on his death left this country, and employed himself in teaching Hebrew in the college of Hornbach in Germany. He was afterwards professor of Hebrew at Heidelberg, and at this place translated into Latin the Syriac version of the New Testament, and joined Frances Junius in a translation of the Old Testament from the Hebrew. From hence he removed to Metz, and finally to Sedan, prosecuting his employment of teaching Hebrew, and died at the latter place in 1580. All Tremellius's writings related to the Oriental languages; and of these were Hebrew, Chaldaic, and Syriac grammars, a Hebrew Catechism, Commentaries on the Prophecy of Hosea, and the above-mentioned translations. Of his version of the Bible, F. Simon says that it is not much esteemed by the Protestants; and that the writer's Judaism has given him a singularity of manner, which makes him often wander from the true sense of a passage, and moreover that his Latin style is affected and inaccurate. Simon, Hist. Crit. du Nouv. Téxt.

TREMENTINE, in Geography, a town of France, in the department of the Maine and Loire; 6 miles N.E. of Cholet.

TREMEZZO, a town of Italy, in the department of the Lario; 14 miles N. of Como.

TREMILITI, three small islands in the Adriatic, near the coast of Naples; they are called Caparia, St. Domino, and Tremiti or St. Nicolò. N. lat. 42° 19'. E. long. 15° 34'.

TREMITUS, a town of the island of Cyprus, at one time the fee of a bishop. It was destroyed by Richard I. king of England; 12 miles W.S.W. of Nicosia.

TREMLITZ, a town of Bohemia, in the circle of Bechin; 7 miles S. of Pofchaken.

TREMOLANTE, in the Glass Trade, a name for the preparation of calcined brads, otherwise called arpel, used either for a sky-blue, or a sea-green.

TREMOLITE, in Mineralogy, a mineral which received its name from Tremola, a valley in the Alps, where it was discovered. This mineral is classed by Haly with hornblende or amphibole, and called by him amphibole granulitze. It is divided by some mineralogists into three sub-species: asbelous tremolite, common tremolite, and glaisser tremolite. They have all a fibrous or radiated structure, with a vitreous or pearly luster. The filaments feel harsh.
and rough to the touch, and scratch glass when rubbed upon it under water. By this property it may always be distinguished from albite, to which it bears a considerable resemblance.

Alophous tremolite (amphibole blanc of Haüy) is of various shades of white. It occurs massive in wedge-shaped or sphenitic concretions. The structure is fibrous and radiated: it is translucent on the edges, and somewhat brittle and feltile. The specific gravity is 2.683. It melts before the blowpipe into an opaque white mass. When rubbed or struck in the dark, it emits a pale reddish-coloured light: when thrown on hot coals, it gives out a greenish-coloured light.

Alophous tremolite occurs most frequently in granular foliated lime-stone, or in dolomite. It is sometimes found in chlorite, and more rarely in trap-rocks. It occurs at Glenelg in Inverness-shire, in Aberdeen-shire, and Isolmkill, and in basalt at the cattle-rock of Edinburgh. It is found also in various parts of Europe, and in granular lime-stone with augite on Mount Vesuvius.

Common tremolite (grammatite, Haüy) occurs of various shades of white, and sometimes dark smoke-grey. It occurs massive and crystallized. The primitive form of the crystal, according to Haüy, is an oblique prism, with a rhomboidal base, the planes of which are inclined at an angle of 127° and 53°. The more common form of the crystals is a very acute rhomboidal prism, with the edges more or less truncated, and the lateral planes longitudinally streaked.

This mineral splits easily, not only in the direction of the planes of the crystal, but also in that of its diagonals. When one of the prisms is broken across, we may observe a line strongly marked in the direction of the principal diagonal; hence it may at first sight be considered as a twin crystal, but this is not the fact.

Common tremolite is translucent or semi-transparent; it scratches glass, is brittle, and is fusible, but with great difficulty, by the blowpipe. According to Brongniart, the crystals of tremolite are rarely found pure, but generally contain a portion of the accompanying rock in the interior. The constituent parts are flated as under:

<table>
<thead>
<tr>
<th></th>
<th>Cherevis</th>
<th>Langier</th>
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</thead>
<tbody>
<tr>
<td>Silex</td>
<td>27.0</td>
<td>50</td>
</tr>
<tr>
<td>Magnesia</td>
<td>18.5</td>
<td>25</td>
</tr>
<tr>
<td>Lime</td>
<td>21.0</td>
<td>18</td>
</tr>
<tr>
<td>Alumina</td>
<td>6.0</td>
<td>0</td>
</tr>
<tr>
<td>Carbonic acid</td>
<td>25.0</td>
<td>5</td>
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It occurs in the same situations as alophous tremolite, and also in metalliferous beds, and sometimes in serpentine and granite.

Glaity Tremolite.—Its colours are the same as those of common tremolite. It occurs massive, and in acicular crystals. The luster is shining, but in a less degree than that of common tremolite. It is translucent and rather brittle. The constituent parts of this mineral vary in different specimens. According to Langier, the tremolite from St. Gothard varies as under:

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<table>
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<tbody>
<tr>
<td>Silex</td>
<td>28.4</td>
<td>41</td>
</tr>
<tr>
<td>Lime</td>
<td>30.0</td>
<td>15</td>
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<tr>
<td>Magnesia</td>
<td>18.0</td>
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<tr>
<td>Water and</td>
<td>23.0</td>
<td>23</td>
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Though tremolite is arranged under a distinct species from hornblende and actinolite by professor Jameson, it is classed under the same family. In a general view he observes, that tremolite is characterized by its white colours, actinolite by its bright green colours, and hornblende by its dark green colours. The count de Bourvon states, that the phosphorescence of tremolite is owing to an intermixture with dolomite, and when the latter mineral is separated from it by acids, the property is destroyed.

TREMONT, in Ancient Geography, an island situated near that of Delos, subject to frequent earthquakes.

TREMONT, in Geography, a town of France, in the department of the Maine and Loire; 3 miles E.N.E. of Vhières.

TREMOR, in Medicine. See Palsy.

Tremor of the Heart. See Palpitation.

TREMORGEL, in Geography, a town of France, in the department of the North Coasts; 5 miles S. of Brooms.

TREMÒUILLE, LA, a town of France, in the department of the Yenne; 6 miles E. of Montmorillon. N. lat. 46° 28'. E. long. 1° 7'.

TREM, a town of Spain, in Catalonia, on the Noguera Palaqева; 20 miles N. of Balaguer.

TREMBUTTEL, a town of the duchy of Holstein; 20 miles E. of Hamburg.

TREMULA, in Ancient Geography, a town of Africa, in Mauritania Tingitana, upon the route from Tncolofoida to Tingis. Anton. Itin. Allo, a town of Hispalis, belonging to the Bafilethi.

TRENCH, in Agriculture, a narrow opening or furrow cut in land by the spade or plough, for the purpose of draining or watering, and some other uses. Allo, a small opening made in digging and working land over in different caves, and in laying it up both in ploughing and gardening. See Spring and Surface Drain, Watering Land, Ridges, and Ridding-up.

The cutting should be very exact for the two first purposes, the different sorts of materials raised being laid to the different sides of the trenches, which, in the latter case, are now mostly made in the wedge form.

Many of the bogs in Ireland have been drained, and made good ground, by only digging trenches round them.

TRENCH Filled-Drain, that fort of surface-drain which is laid with some kind of material for affording a proper passage to the water in its lower part, the upper being covered in with loose earth. See Surface Drain.

TRENCH-Planting, in Agriculture and Gardening, the practice of setting and putting out plants and other productive matters in trenches. It is a method which is had recourse to for many different sorts of crops in each of these departments of cultivation. In the former for potatoes and some others, and in the latter for a very great number of plants and roots, as is seen under their different heads.

It has lately too been practised for asparagus, and some other crops, with very great success. In planting this valuable vegetable in this way, it was done in the early spring, the ground being first dug to the depth of eighteen inches, and well incorporated with rotten dung quite to the surface; a trench four or five inches deep was then formed, in which the plants, at the time twelve inches in height, were planted at three inches apart, keeping the tops perfectly upright, and breaking or cutting the roots as little as possible, covering them in with the spade, and treading them gently with the foot; after which the work was finished by a good watering. The plants scarcely flagg'd at all, though no care had been taken to preserve the mould about their roots, and not one of them died, but they far surpassed in the course of the summer those in the seed-bed rows, and some of them were capable of being cut the following year, in consequence of their great progress. The soil had a large proportion of peat-earth in it.
Sea-kale has likewise been raised in trenches with great advantage. They were made the fame depth as above, eight inches of loose foil being left in the bottom, with which, fix inches depth of river-fand were then intimately blended. The trench was now a foot deep, and being filled with fix inches more of very light sandy loam, and the whole well mixed together, was fowm in a line along the middle; and as the plants grew they were earthed up. The plants became, in this mode, fo flout in the second year, as to be made ufe of by being blanched by means of straw thaken loosely over them, removing it as it became wet and heavy.

There are probably many other plants, seeds, and roots, that have not yet been tried, which may be raised in this method of planting with great success and advantage.

**Trench-Plough,** in Agriculture, that sort of tool of this kind, which is contrived for the purpose of opening and working land to a much greater depth than the common kind, fo as to allow tap-rooted plants to frike them deeper, and form them better. See Plough and Tap-Root.

**Trench-Ploughing,** the practice of opening and loosening the soil of lands to a great depth by means of fuch ploughs, which is a method that is essentially necessary where the roots of crops are to fhoot and frike down to great depths, as without it such roots are incapable of being grown in the belt and most profitable manner. The work is sometimes performed at one operation, but in other cafes the tool does it by going twice in the fame track, rendering the earth foole, and capable of being penetrated to a fill greater depth. This mode of preparing land is much too little had recourse to by farmers in many cafes.

**Trenches,** in Fortification, are ditches which the besiegers cut, to approach more fecurly to the place attacked; whence they are also called lines of approach. See Parallel.

They fay, mount the trenches, that is, go upon duty in them. To relieve the trenches, is to relieve fuch as have been upon duty there.

The enemy is faid to have cleared the trenches, when they have driven away, or killed, the soldiers who guarded them.

**Trench, Tail of the,** is the place where it was begun: and the head, that to which it was carried.

Trenches are of several sorts, according to the nature of the foil: if the adjacent territory be rocky, the trench is only an elevation of bavins, gabions, wool-packs, or epaulements of earth, cast round about the place; but where the ground may be easily opened, the trench is dug in it, and bordered with a parapet on the fide of the besieged.

The breadth of the trenches is from eight to ten feet, and the depth from fix to feven: they are cut in talus, or afflope.

The trenches are to be carried on with winding-lines, in fome manner parallel to the works of the fortrefs, fo as not to be in view of the enemy, nor to expose their length to the enemy's fhot: for then they will be in danger of being falled upon, or fome by the enemy's cannon: this carrying of the trenches obliquely, they call carrying them by courfes, or returns. See Parallel.

**Trenches, Opening of the,** is when the besiegers begin to work upon the line of approaches; which is usually done in the night; sometimes within muskett-shot, and sometimes within half, or only whole cannon-shot of the place, if there be no rifing ground about it, the garrifon ftrong, and their cannon well ferved.

The workmen that open the trenches, are always supported by bodies of men againft the fallacy of the besieged; and sometimes those bodies lie between them and the place, as also on their right and left.

The pioneers fometimes work on their knees; and the men that are to support them, lie flat on their faces, in order to avoid the enemy's fhot; and the pioneers are likewife ufuall covered with mantelets, or faulfons.

**Trench-Guard.** See Guard.

**Trench the Buffaft, To,** is a fem-phrase, signifying to divide the ballaff into feveral trenches in a ship's hold.

**TRENCHARD, John,** in Biography, a political writer, was the fon of Mr. Trenchard, secretary of state under King William, and born in 1669. Liberally educated, he was placed in one of the inns of court, with a view to the study of law. He was called to the bar, but as he preferred a political life, he abandoned the profession, and obtained the place of the commiffioner of the forfeited estates in Ireland. Having acquired confiderable wealthy by marriage, by the death of an uncle, and by the deceafe of his father in 1695, he came into parliament for the borough of Taunton, and appeared as a patriotic member and writer. He was a zealous opponent of a standing army; and foon after the peace of Rylwicke in 1697, which rendered needlefs fuch a force, he pubhcled a pamphlet, entitled "An Argument fhewing that a Standing Army is inconfiftent with a free Government, and absolutely deftructive to the Conftitution of the English Monarchy." This was followed, in 1698, by "A short History of Standing Armies in England." These pamphlets are fpontly to have occasioned the king's fending away his Dutch guards, and the army's being reduced to a very low ettablishment. In many fubfquent years, Mr. Trenchard continued to write occanionally in favour of liberty; and having taken Thomas Gordon, a perfon of fimilar fimilitudes, into his houfe, they began in 1720 to publich periodically a feries of papers, entitled "Cato's Letters," for the profefTed purpose of promoting civil and religious liberty. Trenchard died in 1723, at the age of fifty-four; and Gordon published his eulogy in the "Independent Whig." Biog. Brit.

**TRENCHES, in Heraldry.** See Tranche.

**TRENCHES' Island, in Geography,** an ifland near the coast of South Carolina; 25 miles in circumfrence. N. lat. 32° 13'. W. long. 80° 58'.

**Trenching,** in Agriculture, the operation and pracfice of working over land in trenches by the fpade. It is had recourse to in bringing fome kinds of waste lands into cultivation, in fome cafes and particular situations, as in the northern parts of the ifland, where labour is cheap; but in others it is moftly too expensive.

It, however, anfwers fometimes in cafes where it could hardly have been expected, on account of its being fo very complete, as fearely to require any thing being done afterwards to the ground.

The term afo signifies the laying up land in the ridge form, either by the fpade or plough.

**TRENCHMORE,** the name of an old English dance; of which nothing certain is now known, but that it was a lively movement.

**TRENCK, Frederic, Baron von,** in Biography, an adventurer, was descended from a noble Prussian family, and born at Konigb-rg in 1726. Having been too much indulged in his youth, and losing his father when he was twelve years of age, he became ungovernable, and the fport of his own impetuous pallions. In 1742, at the age of fifteen years, he entered into the Prussian guards, then quartered at Potsdam. In 1744, at the commencement of the fcond Sile-rian war, he attended the king as an aide-de-camp; but being fufpected of a traitorous correspondence, he was arrefted, and confined in the prison of Glitz, and failing in his firft attempt to make his ecape from prifon, he at length succeeeded
ceed by bribery, and got safe to Bohemia, and afterwards to Elbing, in Polish Prussia, in March 1747. After various adventures he arrived at Moscow, where he intimated himself into the good graces of the lady of the grand-chancellor Belzuc, the favourite of Elizabeth. From Moscow he made a circuitous tour to Vienna, with a view of recovering some contested property; and dissatisfied with the reception he found at the Austrian court, he determined to return again to Russia; but in passing through Dantzic, he was arrested at the request of the Prussian resident, and committed to prison at Magdeburg, where he remained ten years. Here he amused himself, during a tedious and rigorous imprisonment, in writing verses; which, long after his release in 1763, he published at Frankfort on the Main, in 1769. He published some other works at Aix-la-Chapelle, where he became editor of a gazette, and married a lady of respectable character and connections. Finding the occupation of a gazette-writer tiresome and not lucrative, he began business as a wine-merchant; but the wine-trade not answering his expectations, he disappeared about the year 1783. In 1792 he edited a journal at Hamburgh and Altona, and from the latter place he removed to France, where he left his life by the guillotine in the month of July 1794. The Memoirs of his own Life appeared at Berlin in 1787, in two parts, 8vo. Of the authenticity of the facts stated in these memoirs, great doubts have been entertained. His life, translated into French by himself, was published at Paris in 1789, 3 vols. 8vo. A new edition of his "Macedonian Hero" was printed in 1788, Frankfort and Leipzig, 8vo.


TRENSIN, in Geography, a town and castle of Hungary, near the river Waig, situated on a rock, and defended by a very strong castle. Near it are some hot baths; 20 miles N.N.W. of Topoltsan.

TREND, that part of the flock of an anchor from which the size is taken.

TRENDING, in Rural Economy, the operation or practice of freeing wool from filth of different kinds. It is usually done by persons who are called tinders, and who are appointed and sworn for the purpose. In mild sheep-districts, the best wool is always understood to have gone through this process, and then to be worth two or three shillings the tod more than other untended wool. The fleeces in such fences are neatly rolled together, and bound with oller or with bands in some places. It is sometimes termed tendering. See Sheep and Wool.

TRENDLE, a term signifying the wheel of a barrow, or any thing which turns round in that manner when of the low wheel kind.

TRENNO, in Geography, a town of Italy, in the department of the Olena; 4 miles N.W. of Milan.

TRENSDORF, a town of Bavaria, in the bishopric of Bamberg; 4 miles S. of Bamberg.

TRENT, a city of the county of Tyrol; in Latin Tridentum, called by the Italians Trento, and by the Germans Trient; and situated upon the Adige or Etzch, in a very fruitful valley, surrounnded with high hills. It was built by the Cenomani Gauls, who were dispossessed by the Romans. The Goths became masters of it when they came into Italy, and after them the Lombards. Afterwards it was pos.sessed by the German emperors, until 1377, when Wenceslaus, son to Charles IV., gave it to the church of Rome. Afterwards its bishops, being made princes of the empire, became temporal as well as spiritual lords of the city. Some authors affirm that the name Tridentum is derived from Neptune's fceptrum, or trident, to whom they say the city was once consecrated. This opinion took its rise from an ancient marble being found there, on which was a Neptune holding his trident. Others derive the name from three rivers and torrents that fall into the Adige, a little above and below the city. Others say it owes its name to three high rocks in the neighbourhood, which appear like three teeth, tres dentes. The bishop was a prince of the empire, and temporal as well as spiritual lord of his diocese, which is of very considerable extent; but notwithstanding the sovereignty of the bishop, the city of Trent has its own distinct privileges, and magistrate to preserve their own confines of two burgo-masters, who preside by turns, and twelve councilors. Trent contains no streets exactly regular, and the houses are in general old. The palace is large, but in the antique style. Besides the cathedral, there are three parish churches, a college, and some convents; 55 miles N. of Mantua. N. lat. 46°. E. long. 11°. 5'.

TRENT, a princely bishopric of Germany, situated in the Tyrolo, in which this ancient bishopric was gradually increased by the liberality of the ancient Roman emperors. Though the bishop of Trent, after the dilpation ratified in the reeds of the empire, at Augsburg, in the year 1548, held of the archducal house of Austria, as a land fiate, yet he enjoyed, as an immediate prince of the empire, both a seat and voice at the diets, in the college of princes of the empire, and likewise actually fent deputies to the diet of the empire. This prelacy also was a fiate of the circle of Austria. Among the indemnities agreed to at Ratibon, in 1802, the bishopric was given to the grand duke of Tuscany, as archduke of Austria. It was afterwards ceded to Bavaria.

TRENT, a town of the island of Rügen; 11 miles N.W. of Bergen.

TRENT, a river of England, which rises in the north-west part of Staffordshire, on the borders of Cheteford, about six miles south-west from Leek; taking a south-east direction, it crosses the county to the borders of Leicestershire and Derbyshire; it then takes a north-east direction, and crosses the county of Derby and Nottingham to Newark, from whence its direction becomes nearly due south, till after passing a small part in the north of Lincolnshire, it joins the Ouse, and the two streams form the Humber. Canals are made or making, to open a communication between this river and various parts of the kingdom, viz., from the mouth of the Idle, below Gainsborough, to Redford and Chetefeld; to Lincoln, and from hence to Tatterfale, Horncastle, Seafor, Bolton, and the sea; from near Nottingham, to Cromford and Winter; from the mouth of the Derwent, one branch through the counties of Derby, Stafford, and Chetefeld, to the Mersey, which is joined with another branch to Coventry and Bransfor, where it meets with the canal from Brentford: other branches join the Thames at Lechlade, the Avon at Warwick, the Severn at Worcester, and many others. The Trent is of itself navigable from Burton in Staffordshire.

TRENT, a river of Canada, which runs from Rice lake to Lake Ontario.—Alfo, a river of North Carolina, which runs into the Neuf, at Newbern.

TRENT, Council of, in Ecclesiastical History, denotes the council assembled by Paul III. in 1545, and continued by 25 sessions till the year 1563, under Julius III. and Pius IV., in order to correct, illustrate, and fix with perfection, the doctrine of the church, to restore the vigour of its discipline, and to reform the lives of its ministers. But it has been a matter of complaint by many, both in and out of the communion of the church of Rome, that this assembly, instead of reforming ancient abuses, rather gave rise to new enormities. It is alleged, that opinions of the scholastic doctors on intricate
intricate points, which had been left undecided, were by this
council absurdly adopted as articles of faith, and imposed
with violence upon the confidences of the people, under pain
of excommunication: that there is an ambiguity in the decrees
and declarations of this council, which renders the disputes
and differences, that had rent the church, more intricate and
perplexed, and which really multiplies and propagates, in
stead of lefthening and suppreffing them: that matters were
decided in this assembly, according to the despotic will of
the Roman pontiff, without regard to the dictates of truth,
or the authority of Scripture: and that the few wise and
pious regulations that were made in this council, were never
supported by the authority of the church, but suffered to
degenerate into a mere lifeless form or shadow of law, which
was treated with indifference, and transfigured with impun-
ity. It will not, therefore, appear surprising, that there are
certain doctors in the Roman church, who, instead of
submitting to the decisions of the council of Trent, as an
ultimate rule of faith, maintain that these decisions are to
be explained by the dictates of Scripture and the language
of tradition: nor can we wonder that this council has not
ever where the fame degree of credit and authority, even
in those countries that profess the Roman Catholic religion.
Some countries, indeed, such as Germany, Poland, and
Italy, have adopted implicitly and absolutely the decrees of
this council, without the least restriction. But in other
places it has been received and acknowledged on certain
conditions, which modify, not a little, its pretended author-
ity. Among thefe latter we may reckon the Spanish do-
minions, which, during many years, disputed the authority
of this council, and at length acknowledged it only so far
as it could be adopted without any prejudice to the rights
and prerogatives of the king of Spain. In other countries,
such as France and Hungary, it has never been solemnly
received or publicly acknowledged. Indeed in the former
of these kingdoms, thefe decrees of Trent that relate to points
of religious doctrine, tacitly and imperceptibly through the
power of custom, acquired the force and authority of a rule
of faith; but those which regard external discipline, spiri-
tual power, and ecclesiastical government, have been con-
stantly rejected, both in a public and private manner, as in-
confident with the authority and prerogatives of the throne,
and prejudicial to the rights and liberties of the Gallican
church.

Notwithstanding the preceding remarks, the decrees of the
council of Trent, together with the creed of pope
Pius IV., contain a summary of the principal heads of the
Roman Catholic religion. See Popery.

However, in these decrees and confeffion of faith, many
things are expreffed in a vague and ambiguous manner, with
a view to the indefinite divisions then prevalent in the church:
and several tenets are omitted in both, which no Roman Ca-
tholic is allowed to deny, or even to question. But it must
be acknowledged, that in these decrees, and in this confeffion,
several doctrines and rules of worship particularly pertaining
to the doctrine of purgatory, the invocation of saints, and the
worship of images and relics, are inculcated in a much more
rational and decent manner than that in which they appear in
the daily service of the church, and in the public practice
of its members: and it is to be observed, that in deducing a
just notion of the doctrine of Rome from the decrees of the
council of Trent, regard ought to be had, not so much to
the terms made use of in these decrees, as to the real signifi-
cation of these terms, which must be drawn from the cu-
toms, institutions, and observances, that are, every where,
Eng. ed. 8vo.

TRENT, Council of, congregation for interpreting the decrees
of the, is a congregation, the plan of which was formed by
Pius IV. and afterwards instituted and confirmed by
SIXTUS V. It was authorized to examine and decide, in
the name of the pope, all matters of small moment relating
to ecclesiastical discipline; while every debate of any con-
sequence, and particularly all disquisitions concerning points
of faith and doctrine, were left to the decision of the pontiff
alone, as the great oracle of the church. Hence it was,
that the approbation of Innocent XI. was refused to the
artful and injudicious work of Bosquet, bishop of Meaux,
entitled “An Exposition of the Doctrine of the Catholic
Church,” until the author had suppressed entirely the first
edition of that work; and made corrections and alterations
in the second. See Popery.

But though the court of Rome, and all those who favour
the despotic pretensions of its pontiff, maintain, that he
alone who governs the church as Christ’s viceregent, is
entitled to explain and determine the feme of scripture and
tradition in matters pertaining to salvation, and that a
devout and unlimited obedience is due to his decisions; yet
it has been impossible to perforce the wider part of the
Roman Catholic body to acknowledge this exclusive author-
ity in their head. And accordingly, the greater part of
the Gallican church, and a considerable number of learned
men of the popifh religion in other countries, think very
differently from the court of Rome on this subject. They
maintain, that all bishops and doctors have a right to con-
fult the sacred fountains of scripture and tradition, and to
draw from thence the rules of faith and manners for them-
selves and their flock; and that all difficult points and
debates of consequence are to be referred to the cognizance
See Infallible.

TRENTAL, TRIGINTAL, or TRICENNAL, a Romifh
office for the dead, consisting of thirty masses, reafereed for
thirty days succesfively after the party’s death.

The trental is thus called from the Italian, treinta, trinta,
thirty. It is mentioned anno primo Edw. VI.

TRENTON, in Geography, a town of New Jerfey, in
the county of Hunterdon, on the E. fide of the Delaware.
Here the legiflature fatedly meet, the supreme court fit,
and moft of the public offices are kept. The court-houfe is
a handsome building. There is a flourishing academy,
and the number of inhabitants is about 3000; 24 miles N.N.E.
of Philadelphia. N. lat. 40° 13’. W. long. 74° 48’—
Alfo, a poft-town of the province of Maine, in the county
of Hancock, containing 501 inhabitants; 31 miles N.
of Penobfcoet.—Alfo, a town of North Carolina, on the
river Trent; 20 miles S.S.W. of Newbern.—Alfo, a poft-
township of New York, in Oneida county, 12 miles N.
of Utica; bounded northerly by Steuben and Remfien, eafterly
by West Canada creek and Herkimer county, S. by Deer-
field, and W. by Floyd. The town is well watered by
small streams, and by springs. The foil is good: the forest
woods are elm, linden or bafs-wood, butternut, beech,
maple, &c. The inhabitants are principally of New Eng-
land defcent, though fome are of the ancient Dutch from
Holland, and their induftry is well rewarded by the pro-
ducts of agriculture. There are fome very remarkable
falls in West Canada creek, on the easterly border of this
town. This stream affords numerous fices for mills in
Trenton. The population is 1548; the fenatorial electors
are 127. The largest compact settlement in this township
contains from 70 to 80 buildings, and is distant 13 miles
from Utica and 107 from Albany.

TREO, a town on the E. coast of the island of Paros.
TREOGAN, a town of France, in the department of the North Coasts; 9 miles W.S.W. of Roffeneu.

TREOCAT, a town of France, in the department of the Finilhere; 9 miles S.W. of Quimper.

TREPPAN, in Surgery, a circular aw, by means of which the skull is perforated in the operation called trepanning. It bears a considerable resemblance to the well-known instrument named a wimble, and is worked in the same manner. A representation of it is given in Plate VIII. f. 6. of the surgical plates. Formerly, the aw was sometimes made of a conical shape (see f. 5.) but this construction rendered the action of the instrument difficult; and as the fear of a cylindrical aw penetrating too suddenly, so as to injure the brain, was found by experience to be an insufficient reason for the conical shape of the aw, the cylindrical trepan at length came into general use. In this country, the trepan is now superseded by the instrument called a trephine, which has a different kind of handle from that of the trepan, and is not worked in the same way. (See Trephine.) On the continent, however, the trepan still has the preference. Mr. Rodman's trepan (f. 1.) is objectionable, because with it you cannot increase and diminish the pressure on any particular point of the circular groove in the bone, as occasion requires. You must continue to saw every part of the circle. Hence, if the bone be sawn through in one place, and not in another, as generally happens before the operation is finished, the further action of Mr. Rodman's saw will inevitably do mischief to the dura mater, and is not well calculated for completing the division of the bone. See the following article.

TREPPANNING, or Trephining. From what has been said in some preceding articles of this work, (see particularly Head, Injuries of, Extravasation, &c.) the operation of trepanning or trephining, or that of sawing out a portion of the skull, is, in several affections of the brain from compreffion or irritation, the only means of preferring life, and of all other remedies the most urgent and effectual. It should be performed in good time, and the repetition made according to the exigency of the case. In the records of surgery, innumerable facts may be consulted, where the prudent and judicious employment of the trepan has effected wonderful cures, and been the only thing by which the patients' lives could possibly have been saved. The benefit which the operation brings about, is also sometimes so sudden and astounding, that in no instance does the interposition of the surgical art display itself to greater advantage. The immediate restoration of sight by the deprision or extraction of an opaque substance from the eye, is not more beautiful and striking, than the instantaneous communication of the intellectual faculties, and of the powers of speech, of feeling, &c. together with voluntary motion, to a person lying in an apparently lifeless state from an injury of the head. The utility of the trepan is occasionally manifest even in this degree. In the valuable essay of Mr. Abernethy on injuries of the head, a case may be seen, in which the patient, who had been in a condition almost benumbed of animation, rose up and spoke the instant the extravasated blood was removed from the surface of the brain. And among the wounded at the battle of Waterloo, there was a foidier of the 44th regiment, whose state is of equal interest. He had been struck with a musket-ball on the right parietal bone, which was exposed, and had no appearance of being fractured. As, however, the symptoms of compreffion were urgent, and the patient was in nearly a lifeless state, the writer of the present article conceived it right to apply the trephine to the part on which the violence had acted. He had not been long before the external table came away in the hollow of the trephine, leaving the inner table behind, which was not only splintered, but driven at one point more than half an inch into the membranes and subfance of the brain. No sooner were the fragments taken out with a pair of forceps, than the man instantly sat up in his bed, looked round, and began to speak with the utmost rationality. It is a most extraordinary fact, that this patient got up and dressed himself the same day without leave from the medical officers, and never had a bad symptom afterwards. Immediately the operation was finished, the temporal arteries were opened, and some purgative medicines exhibited.

Let not the young surgeon, however, draw from these dazzling cases of success an immoderate foliation of performing the operation; for it should never be undertaken but in the most preffing circumstances, and when the symptoms unequivocally shew, that a dangerous degree of pressure on the brain exists. We recollect an unfortunate example, in which an hospital surgeon of this metropolis ventured to saw out a portion of the frontal bone for a mere long-continued pain in the part: the patient was attacked with inflammation of the dura mater, and perished in three or four days. We may therefore conclude, that the operation is not itself exempt from danger; and it is certain that it ought never to be resoluted on without deep consideration.


The trepan or trephine is never necessary in injuries of the head, except for the purpose of relieving the brain from pressure. Such pressure may be caused by a depressed portion of the cranium, or it may be produced by an extravasation of blood, or the lodgment of matter, betwixt the skull and the dura mater. The chief danger of concussion, when the accident is not directly or soon fatal from the disorganization and mischief done to the brain, depends upon the consequent inflammation of this organ, and therefore can be little likely to be benefited by the use of the trepan. If the operation becomes proper in such a case, it is when an abces has formed under the cranium, and when the confined matter itself creates bad symptoms by its pressure on the brain. This state of things, however, cannot come on till after the inflammation of the brain and its membranes has prevailed a certain time, and it is always accompanied with a detachment of the pericranium and a puffy tumour of the scalp; or, if there be a wound of the latter part immediately over the abces, the lips of the injury acquire suddenly an unfavourable appearance, and lose their vermilion colour. The patient has also had much preceding febrile disorder, pain and tension over the whole head, redness and turgescence of the eyes, and generally more or less delirium. When the matter is forming, there are usually some rigors, and as soon as it is formed, the patient falls into a comatose state, and paralytic symptoms flow themselves. Here the urgency for the prompt application of the trephine is very great, and the patient's chance of living is almost essentially connected with the immediate performance of the operation. This important cafe has been particularly dwelt upon in the writings of Mr. Pott.

In the articles Head, Injuries of, Extravasation, &c. we have laid down the most remarkable symptoms of concussion and compreffion of the brain, a subject which every surgeon should study with earnest attention, before he ever pretends to employ the trepan. For sometimes these accidents are extremely difficult to be discriminated; sometimes they exist together in the same individual, a complication which is peculiarly embarrassing; and in every instance where the symptoms are those of concussion, the oper-
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operation, so far from being indicated, would be a step of all others the most likely to do harm, by increasing the irritation and inflammation of the brain and its membranes. A fall upon the back, or upon the head, occasions a direct concussion of the brain, and the shock, not being materially weakened by the intervention of any yielding elastic structure, is the more dangerous. When a person has fallen from a certain height, and pitched upon his head, his back, the buttocks, the knees, or even the soles of the feet; when he has been instantly deprived of his senses, and then by degrees recovered them and come to himself again; the fact of his having suffered concussion of the brain is clear and indisputable. Concussion has likewise taken place, though in a slighter degree, when the patient has been only stunned by the fall, and experienced a sensation of sparks. But a multitude of degrees separate this feeble concussion from that, in which the substance of the brain is instantaneously disorganized, so that the patient has not the possibility of recovery.

The symptoms of concussion of the brain are attended with coma, and the compresion of this organ by an extravasation is also accompanied with lethargic heaviness. How, then, is the surgeon to ascertain, whether the coma or disordered arises from one or the other of these affections?

Here, in order to avoid repetitions, we beg leave to refer to the observations already made in the articles quoted above. But there is one criterion of such first-rate importance, that it may prevent innumerable fatal mistakes, and, indeed, without the continual recollection of it, no man ought to be rash enough to interfere with this dark and abstruse part of surgery. On this account we shall mention it here, notwithstanding we have already noticed it elsewhere. If the patient is knocked down and stunned directly by the blow, and remains in a state of insensibility, these primary symptoms are attributable to the concussion. On the contrary, when the coma and loss of sense do not take place till an hour or two after the blow, they are to be imputed to an extravasation.

The shock given to the brain by concussion, must, like every other impulse communicated, continue to diminish until it ceases altogether. If, at the very time of the blow, the shock has not been forcible enough to produce alarming symptoms, such symptoms will not afterwards come on when their cause is weakened. Hence the reason may be discerned, why compresion may be distinguished from concussion of the brain, when there has been an interval of sense between the receipt of the blow, and the occurrence of the bad symptoms. But the distinction of the symptoms into primary and consequent, cannot be made when concussion and extravasation exist together.

Having made these few remarks on concussion and compression of the brain, remarks which seemed necessary before we entered into a description of the operation of the trepan, we shall next premise some observations relative to contusions and fractures of the skull, cases on which the most erroneous opinions have been entertained. It is true, that we have in another place (see Head, Injuries of,) considered the subject; but we think it better to recapitulate certain points here, because they have such immediate connection with the application of the trephine.

Contusions of the head not unfrequently occasion a small kind of tumour, which is soft in the centre, but hard and resisting at the circumference, especially when the violence has been considerable. Now the ease with which the centre or seat of the extravasated fluid admits of being depressed, while the circumference remains hard and elevated, is extremely apt to give rise to the belief, that a fracture with depression has happened. The true nature of this accident was first clearly explained by the eminent M. J. L. Petit, and since his time the proper cautions, not to fall into a mistake concerning it, have been laid down by the generality of surgical writers.

Often nothing is more obscure than the diagnosis of fractures of the cranium: their existence indeed can only be made out with certainty, when they can be felt or seen. Thus a fracture of the skull, attended with a wound of the scalp, and exposure of the bone, shews itself in the form of a fissure more or less wide and extensive, and taking various directions. The accident may also be known by the touch, even when the soft parts continue entire, particularly if the fracture is accompanied with splinters, or the edges of the fissure are materially separated. When there are many splinters, entirely detached, a crepitus will likewise serve to explain the nature of the accident; but, unaffected by these symptoms, imparted to him by the sight, the hearing, or the touch, the practitioner cannot at once offer a decided opinion as to whether a fracture exists or not.

In order to procure more positive information, would it be right and judicious to make several incisions, and uncover the bone? But here the surgeon would be embarrassed in the very commencement of his proceedings; for how would he be able to judge where the knife should be applied? Why also should he resort to unfeels and painful operation, which (to say the least of it) could only render the patient's cure more difficult.

The symptoms indicating compresion of the brain, can alone justify an examination of the fracture. These symptoms also must be urgent and alarming; for when they prevail in a slight degree, bleeding and evacuations promise more benefit than any operation on the skull, and consequently all examination of the part supposed to be broken must be unnecessary. The precept, too commonly given, to cut through the scalp for the purpose of bringing the fracture into view, will no longer be matter of surprize, when it is known that, with some surgeons, the operation of the trepan is a thing of course in all fractures of the cranium.

Even when the cranium has been denuded, so that the sight can convey the information respecting the solution of continuity in the bone, care must be taken not to be deceived by a future, or by the grooves of a vessel. In cases of doubt, a modern surgical author advises us to scrape the outside of the bone; and he tells us, that if, after the removal of the external table, the fissure yet appear, and a thread of blood be seen at its outer part, no doubt exists of its being a real fissure. As, however, making this examination can answer no purpose, except with a view to determining the place where the trepan should be applied, we cannot recommend the plan, except where the symptoms are such as to render this information desirable. On the contrary, it appears to us, that all examinations of the bone, made seemingly from mere curiosity, and without any true surgical object, should be deprecated as rash and hurtful.

The danger of fractures of the skull does not depend upon the simple solution of continuity; it bears altogether a relation to the concussion and compression of the brain, with which the injury of the bone may be complicated. The preffure, which is caused by depressed splinters of bone, is less alarming, inasmuch as the caule of the compresion is easy of removal. The preffure arising from extravasated fluid is far more serious, in consequence of the difficulty of ascertaining positively the existence and precise situation of such extravasation.
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The feat of the extravasation is sometimes between the skull and the dura mater, which has been detached from the bone. More frequently it occurs either between the dura mater and tunica arachnoidea, in the substance of the brain, or else in the ventricles. The quantity of extravasated fluid is generally less in those extravasations which are situated between the dura mater and the skull. The extravasations, which are formed in the substance of the brain itself, are not only more considerable, but also, as they mostly depend upon concussion, are more alarming, than effusions on the surface of the dura mater. It is indeed extremely difficult, if not impossible, to ascertain the situation of the extravasated fluid. In such cases, the trepan is like a noose; while concussion, when so violent as to produce internal extravasation, is invariably fatal. In extravasations between the dura mater and the skull, which are almost the only cases of the kind to which surgery can administer relief, when the effused fluid lies under a part of the skull accessible to the trepan, the extravasated fluid is almost always small in quantity. The danger, however, is not the less: ten or twelve drops of fluid are sometimes enough to produce a fatal compression. When the extravasation has happened in the substance of the brain, the compression is far more perilous; in short, it may be said to prove, with very few exceptions, certainly mortal. The danger is not so great, when the extravasation is situated between the skull and dura mater.

The lethargy, the degrees of which increase from mere drowsiness unto the most perfect coma, and the paralyses of the opposite side of the body to the seat of the extravasation, are the characteristic symptoms of this accident, in cases of injury of the head. Having explained elsewhere (see Head, Injuries of, Concussion, Extravasation, &c.) some other symptoms, such as floridous respiration, dilated pupils, &c. which usually indicate pressure on the brain, we need not here dwell upon them. The subsequent increase of the coma and paralytic affections, and the gradual augmentation of their intensity, serve to render these symptoms distinguishable from others, which are suddenly brought on by concussion. But there are instances, as every man of experience knows, in which the concussion ruptures the bloodvessels, and produces an extravasation of blood. In this circumstance, it is obvious that the symptoms of compression are blended with those of concussion. The symptoms, proceeding from the latter cause, always diminith in proportion to the time which has elapsed from the moment of the injury; while those of compression succeed, and, on the contrary, increase in intensity, in proportion as the quantity of extravasated fluid becomes more considerable. Notwithstanding these distinctions, however, it must be acknowledged that there are many cases, in which the surgeon is obliged to remain in doubt with regard to the particular cause of the symptoms. This indecision is the more embarrassing, because the operation of the trepan is necessary in cases of extravasation, but useless in those of concussion. Even when extravasation is known to exist, the practitioner requires more information; for he ought to know the precise situtation of the effused fluid. It is true, indeed, that paralysis of one side of the body indicates the prejudice to be upon the opposite hemisphere of the brain. But what surgeon would venture to follow the practice advised by Van Swieten, and apply to the affected side of the head three crowns of the trepan? Possibily not one of them might fall on the situation of the extravasated fluid. When the skull is broken, the extravasation exists on the same side as the fracture. When it is the effect of concussion, or when the breach of continuity in the skull is what is termed a counter-fracture, the effusion is generally on the side of the head most remote from the blow. If the pressure is caused by a detachment of the internal table of the skull, the nature of the case cannot be ascertained, before the operation of the trepan has been performed on the part of the skull upon which the violence has acted. When there are two extravasations; one depending upon a fracture, and situated immediately under it, between the dura mater and the skull; the other arising from concussion, and situated at some point directly opposite, either between the dura mater and tunica arachnoidea, or within the substance of the brain itself; paralysis may occur on the same side as the fracture; and hence it may be inferred, that the palsy does not always take place on the side opposite to the extravasation. But an examination of the body quickly proves, that the case does not deviate from the common rule. The extravasation produced by concussion, being almost invariably more considerable than that caused by a fracture, accounts for the extension of the palsy to the same side of the body. Sometimes the side which is not paralyzed is affected with convulsions, the pulse is full and hard, and the respiration floridous: in short, the symptoms are analogous to those caused by apoplexy.

The evacuating plan, recommended for the treatment of concussion, (see Concussion, and Head, Injuries of,) is all that can be done, when every thing is uncertain relative to the situation of the extravasation. It is all that can be done in those frequent instances, where the effusion has taken place in the substance of the brain, so that it cannot possibly be voided. The trepan then is indicated only when there is an extravasation between the dura mater and the bone, the fracture being situated in a part of the skull accessible to instruments, and not at the base. We will not here dwell upon the doubtful example, where the fluid lies between the dura mater and the arachnoidea. But are the cases, which we have just been describing, as frequent as they are supposed to be? Cannot the effused blood be generally discharged through the interstices of the broken pieces of bone? Is the trepan usually necessary for the relief of injuries of the head, as Quetelet, Pott, and the French Academy of Surgery maintained?—We think not.

The operation is often useless, and sometimes dangerous. We believe that it should be limited to a small number of cases. The exact determination of the cases in which it is absolutely indispensable, is one of the greatest delicacies in modern surgery.

Richerand contends, that extravasations between the skull and the dura mater, so considerable as to produce compression of the brain, and render the trepan necessary, are much less common than many surgeons think. Even when they do occur, the dura mater is always detached to a certain extent; and, according to this writer, if the bone is much broken, the interstices of the fragments are quite a sufficient for the evacuation of the effused fluid. The following case is quoted in proof of this observation. A woman injured her head, by falling from a height of fifteen feet. The fracture reached the whole breadth of the skull, so that when the os frontis was taken hold of with one hand, and the os occipitis with the other, the two halves of the cranium admitted of being manifestly moved and separated. Blood effused from the fissure, the edges of which were kept apart by a small wedge of wood, in such a manner that the pulsations of the brain were visible. On the sixth day, as nothing was discharged from the fissure, the bit of wood was removed; and on the fifty-second, the wound had completely healed without any exfoliation. On the seventy-second, the patient was discharged from the Hôtel-Dieu, perfectly.

Thus we see that the trepan is often unnecessary in injuries of the head, with fracture of the skull, notwithstanding the co-existence of an extravasation between the bone and the dura mater. This doctrine is very different from what is taught in the memoirs of M. Quefnavy, in the first volume of the French Academy of Surgery. Default, in the last years of his practice, abandoned the operation of the trepan altogether. It has been remarked for many years, that in the Hôtel-Dieu this operation has had very little success; a circumstance which has excited a suspicion, that the foul air of the wards of that establishment may have had a share in bringing on the unfavourable event. We shall not here expatiate on the bad effect of the atmospheric air on the membranes of the brain; a thing of which B. Bell seems to have convinced M. Richerand.

When the skull is fractured by a blow or fall, and the cafe is a simple siffure, the trepan ought to be applied upon the solution of continuity, if the symptoms indicate a dangerous degree of pressure on the brain, and the edges of the fracture are not sufficiently separated to let the extravasated fluid escape.

When the detached portions of bone are depressed, so as to comprefs the brain, the operation is still requisite, if they cannot be elevated by other means. But Richerand maintains, that a positive indication for trepanning is not frequent, either because it is difficult to judge of the existence and situation of extravasations, or because extravasated fluids readily escape through the interspaces of the fragments, when there is asplintered fracture. Such facility is also increased, when one of the portions of broken bone is totally detached, so that it can be removed, leaving an aperture equivalent to what would be produced by the application of the trepan.

When the indications render it necessary, there is no point of the external surface of the cranium to which the trepan, or trephine, may not be applied. The region of the frontal spine and sinuses, however, and the situation of the spines and inequalities of the occiput, the lower part of the squamous portion of the temporal bone, and the track of the meningeal artery running under the anterior inferior angle of the parietal bone, are places to which the instrument ought never to be applied without urgent necessity. The surgeon may trepan upon the futures, and over the sinuses of the dura mater, with perfect safety. A wound of the longitudinal sinuses has not only been found to be free from danger, but actually beneficial, by the evacuation of blood that has followed. The experience of Pott, Callifen, &c. confirms this fact; and they have even purposely opened the vessel with a lancet. Callifen, Syll. Chr. Hodin learn. tom. i. p. 659. edit. 1798.

The manner in which the two tables of the skull recede from each other at the frontal sinuses, would make the operation difficult. Besides, here the spine of the os frontis projects inward, so that the whole of the bone could not be fawn through, without the dura mater being lacerated. In an urgent cafe, however, the surgeon might trepan exactly on the frontal sinuses, by removing the outer table of that cavity with a large trephine, and applying a small one to the inner table. Perhaps also, in these pressing examples, it would be proper to trepan on the centre of the os frontis, and use a chisel for breaking the inner spine of that part of the bone. In the same way, although a surgeon would always prefer avoiding the meningeal artery, he ought not, in urgent cafes, to be afraid of it. The belt modern surgeons well know that the hemorrhage from that vessel is capable of being easily suppressed, by the introduction of a small plug into its orifice.

The practitioner can never be too careful not to place the trepan on a fofe part of the fractured bone, as it would be apt to be pressed inward, fo as to do mischief to the brain.

When the cranium has been perforated with the trepan, and nothing is found between the skull and the dura mater, or underneath this membrane, in the situation where an extravasation may be supposed to exist, additional perforations are to be made elsewhere, if the symptoms should indicate such practice. The repetition of the trepan is particularly requisite in cafes where the fissure runs across a future. The intinite adhesion of the dura mater to the future, explains why this membrane often continues undetached in that situation, while on each side it is separated from the bone, and blood effused upon it. There are then two different extravasations, and two perforations of the bone are absolutely necessary for the discharge of the blood.

Foreign surgeons invariably prefer, for the accomplishment of the operation, an instrument called the trepan, which much resembles a wobble, a tool extensively employed by coopers, and, like it, consists of a handle, to which is adapted a circular faw, or, as it is termed, the crown of the trepan. The diameter of the crowns varies from fix to ten lines, and they are about one inch in height.

In England, the trepan (Plate VIII. Surgery) has gone into disuse, the trephine being generally preferred, though perhaps without great reason. The trephine differs from the trepan in having its crown fixed upon and worked with a common tranfverfe handle, instead of being turned with a handle like that of a wobble. On the continent it is objected, that the trephine which the English surgeons make use of, requires a stronger hand and greater pressure than the trepan, fo that at the moment of finishing the division of the bone, one runs a risk of forcing the instrument too deeply, and lacerating the brain and its membranes. We must confess, however, that we have never seen this accident occur, and the trephine is now made in fo excellent a manner, that it will cut the bone fast enough without any occasion for immediate pressure. If some badly made trephines cut with too much difficulty, the trepan may be accused of dividing the bone with too much celerity. A man of ordinary skill may use either instrument, and an awkward practitioner will be apt to do mischief let him employ which he will. See Trephine.

The first object in the performance of trepanning, is to expose the exact part of the bone on which it is intended to apply the instrument. In some cases, the scalp is so torn and injured, that a sufficient extent of the skull is already uncovered, and it is unnecessary to employ a scalpels. But in the majority of instances, the use of the knife must precede that of the saw. Incisions of a crucial form, or shaped like the letter T or V, are found to be most eligible, because they allow their edges to be brought together again with ease, and they enable the surgeon to denude a larger surface of bone than could be managed with an incision of a different figure, but of equal size. The old surgeons ignorantly made circular wounds, and without consideration cut large portions of the scalp away before they applied the trepan. The consequence was, that the patient was fure of being permanently disfigured, and the edges of the perforation, remaining for a long while uncovered, frequently exfoliated.

The generality of surgical authors next advise us to be careful to scrape away the pericranium from the part to which the trepan, or trephine, is to be applied, so as to let the saw act with more facility. We have never found this proceeding
proceeding necessary, and conceive that, as more of the pericranium must always be removed than what is absolutely intended, it may sometimes be the cause of exfoliations. We advise, therefore, to be rejected, as well as the old plan of scraping the periosteum off the bones which are to be sawn in amputations. The ruggine, which is kept in most cases of trephining instruments for the purpose of scraping off the pericranium, would be no real loss if omitted.

Now, on first beginning to work either with the trephine or trepan, the practitioner would find that it would flip about and not steadily divide the bone, were it not for a particular contrivance. This is the centre-pin, which admits of being pushed down a little below the level of the teeth, and being very sharply pointed, immediately fixes itself in the mid-point of the circle of bone which is to be removed. As soon, however, as the teeth of the trephine have made a sufficient furrow, the centre-pin should be withdrawn, as it would otherwise wound the dura mater before the sawing of the bone were completed.

In making the incision through the scalp, when there is a fracture, the knife must be used with some degree of caution, lest it should depress the fragments of bone against the cerebrum, or be carried too deep, so as to injure the dura mater. In certain instances, it will be advisable to make the requisite incision with a director and curved bifurcous.

The trephine is worked by being rotated backward and forward; the trepan is turned round continually in one direction. In trepanning upon a simple fracture, or fissure, the crown of the instrument should be so placed as to include an equal portion of the bone on each side. But when there are portions of bone depressed and moveable, it is customary to apply the trepan upon an adjacent solid part of the cranium, which will serve after the operation as a fulcrum for the elevation or extraction of the depressed fragments. We must observe, however, that this method, if practiced indiscriminately, will often lead to an unnecessary removal of bone; a circumstance which it is always devisive to avoid. Loose depressed pieces of bone should constantly be taken away with a pair of forceps, whenever it can be done; and then no trepanning will be needed. Alto, when the fracture is shaped somewhat like the letter V, or when it is of an oblong form, the depressed piece of bone may frequently be entirely removed by sawing through the part which connects it with the rest of the cranium, and no circle of bone will stand in need of being sawn out. For the performance of such operation, Mr. Hey's saws (represented in the surgical plates) will be found exceedingly advantageous.

The surgeon should not press too heavily with the trephine, or trepan, when he is in the act of sawing the bone; but execute the busines with as light a hand as possible. As soon as a sufficient groove is formed for the teeth of the crown, the centre-pin is to be taken out. The first part of the sawing may be done briskly. Afterwards, the operation is to proceed slowly and cautiously. With a bit of quill, the surgeon must examine the depth of the circular groove, in order to be sure that he has not sawn through at any particular point. When one side seems to be more cut than another, the saw must not be allowed to act upon it so much; and if there be any part of the circle which is completely sawn through, the instrument must not be applied to that point any longer. While the surgeon examines the depth of the groove with a piece of quill, an affulent takes care to clean the teeth of the saw with a small brush made for the purpose, by which means the motion of the instrument will not be obstructed by the particles of bone.

When the bone become tinged with blood, the teeth of the saw are known to have reached the diploe; but the practitioner must remember, that the diploe is not a criterion which will be met with in every instance, as in some subjets it is so inconsiderable, that it does not give any tinge of blood to the bone-dust. It is of importance to be aware of this fact; for were a surgeon to saw boldly on in all cases until he sees marks of his having arrived at the diploe, he would frequently be apt to injure the dura mater and brain. When he knows that he is sawing the internal table, he is to proceed with great flowness and circumspection, making repeated examinations of the groove with the pointed quill. When the portion of bone to be taken out appears to be connected with the rest of the skull principally on one side of the groove, the trephine is to be inclined to that side. Immediately the circle is loose enough, it is to be taken out with a pair of forceps constructed for this object, or with the elevator. (See surgical plates.) But rather than run a hazard of sawing too deeply with the trephine, we would always recommend the surgeon to prefer breaking the few last fibres of bone which impede the circle from being taken out.

When there are any inequalities round the margin of the perforation, they must be carefully removed by means of the lenticular knife. (See plates.) In doing this part of the operation, care must be taken not to let the lenticular knife make improper pressure upon the dura mater, a thing which might have the worst consequences.

The circle of bone having been fawn out, the surgeon is to keep in mind the grand object of the operation; viz. that of relieving the brain from the pressure, which is the cause of the alarming symptoms. All depressed fragments of bone are to be raised, and, if quite detached, they ought to be entirely removed. All fculi of bone, penetrating the dura mater and substance of the brain, are to be extracted without delay. If there be blood or matter upon the surface of the dura mater, it now escapes, being expelled by the pulvatory movement of the cerebrum.

When the extravasation is under the dura mater, a puncture may be cautiously made through this membrane with the point of a bifurcous, or lancet. There must be, however, a manifest elevation and tension of the dura mater, arising from the lodgment of a fluid below it, to justify the preceding practice. If blood should be found in the suspected situation, the puncture may be enlarged into a crucial incision.

According to surgical writers, if, after dividing the dura mater, the surface of the brain appears smooth and fabby, with a fluctuation, there is an abieces in its substance. They then function the method of carrying the point of the bifurcous to the depth of an inch, if circumstances render so deep a puncture necessary. But, says Richerand, prudence forbids us to go further. Cutting the surface of the brain causes no pain, and it produces less danger than one could presume to expect; but experience and observation have proved, that the essential parts of this organ are situated in its base, and that its surface may be removed without danger or pain. Nofgr. Chir. t. ii. p. 301. edit. 3.

After the operation of trephining, the divided scalp is to be placed as nearly as possible in its natural situation, and lightly dressed with a simple pledge of any common unirritating ointment. In applying the dressings, the surgeon should invariably keep in view these objects; namely, to let whatever is put on the wound be as light as possible, not apt to make pressure on the brain, and of a nature which cannot excite irritation. All stimulants are to be strictly avoided; nor will any bandage be better than an ordinary
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ordinary night-cap of sufficient size to be put on with facility. It may be secured with bits of tape, which are to be tied under the jaw.

The aperture in the skull usually becomes closed with soft granulations, which slowly acquire a hard consistence. These almost constantly grow from the edge of the perforation, and seldom from the surface of the dura mater. While the cicatrix is soft, it should be protected from external injury with a thin piece of horn or metal. Exfoliations from the margin of the perforation sometimes retard the healing of the wound; but now that the practice of dressing with drying spirituous applications has been exploded, and the removal of any part of the scalp is condemned by all the best surgeons, these unpleasant consequences are rendered much less frequent than in former days.

Trepanning, in Sheep, the operation of extracting the bags or cysts that contain a watery fluid from the heads of these animals, which are the cause of disease. See Sturdy.

TREPASSER'S Bay, or Trepassy Bay, in Geography, a bay on the south coast of Newfoundland. N. lat. 46° 56'.

W. long. 53°.

TREPELA, a town of Servia; 5 miles N.E. of Novibafar.

TREPHINE, in Surgery. The operation of trepanning is now frequently called the operation of trephining, from its being generally performed in this country with a trephine, which is a more modern instrument than the trepan.

The trephine consists of a simple cylindrical saw, with a handle placed transversely, like that of a gimlet; and from the centre of the circle, which the teeth of the faw describe, a sharp little perforator projects, named the centre-pin.

The upper part of the centre-pin is made to screw into a corresponding hole at the side of the top of the faw, and is capable of being taken out or put in at the surgeon's option, by means of a little key for the purpose. Its use is to fix and steady the trephine, when the instrument first begins to work, that is, before the teeth of the faw have made a sufficient circular groove, in which they can securely move. But as soon as an adequate groove is formed, the centre-pin must always be taken out; because it is now unnecessary, and, if not removed, it would not only retard the progress of the operation, but inevitably penetrate the dura mater and brain, when the teeth of the faw had cut to a certain depth into the cranium. Some trephines contain centre-pins, which are contrived to slide up or down, and to admit of being fixed in either situation, by turning a little screw. This method leads to us both ingenious and convenient.

The cylindrical part of the trephine is often termed the egnon of the instrument. The surgeon should always have at least two or three cylindrical faws of various sizes; for it is a commendable rule never to faw away any more of the cranium, or indeed of any other bone, than is absolutely requisite for the accomplishment of some assignable object. There is no occasion, however, for having more than one handle, which may be made to fit any of the faws.

The trepan is worked in the manner of a wimple, the instrument turning round and round upon its own axis; but the trephine only performs semicircular movements, which the surgeon imparts to it by the pronation and supination of his hand. As its teeth are arranged perpendicularly, they cut whether the instrument is turned from the left to the right, or from the right to the left.

Certainly caves do frequently present themselves, in which trepanning is absolutely necessary; and yet there is no occasion for removing a complete circular portion of the cranium; the taking away of a piece of smaller size, and different shape, would sometimes be much more advantageous. A very good instrument for effecting this purpose is a common trephine, terminating only in a semicircular saw, instead of a circular one. With this the surgeon can cut across the base of certain depressed portions of bone, and take them away, without any occasion for removing also a circle of the cranium.

The faws, however, which Mr. Hey has described, should constantly be kept in every case of trephining instruments. This practical writer remarks, that 'the purposes for which any portion of the cranium is removed, are, to enable the surgeon to extract broken fragments of bone, to elevate what is depressed, and to afford a proper site to blood or matter that is, or may be confined, &c.'

"When a broken fragment of bone is driven beneath the found contiguous part of the cranium, it frequently happens that the extraction cannot be executed without removing some of the unbroken part under which the fragment is depressed. This might generally be effected with very little loss of sound bone, if a narrow portion of that which lies over the broken fragment could be removed. But such a portion cannot be removed by the trephine. This instrument can only saw out a circular piece. And as, in executing this, the central pin of the saw must be placed upon the uninjured bone, it is evident that a portion of the sound bone, greater than half the area of the trephine, must be removed at every operation. When the broken and depressed fragment is large, a repeated application of the trephine is often necessary, and a great destruction of sound bone must be the consequence.

"When the injury consists merely of a fissure with depression, a small enlargement of the fissure would enable the surgeon to introduce the point of the elevator, so as to raise the depressed bone. But a small enlargement of the fissure cannot be made with the trephine. When it is necessary to apply the elevator to different parts of the depressed bone, a great deal of the found cranium must be removed, where a very narrow aperture would have been sufficient.

"The same reasoning will apply to the case of openings made for the purpose of giving a discharge to extravasated blood or matter.

"If a faw could be contrived, which might be worked with safety in a straight, or gently curvilinear, direction, it would be a great acquisition to the practical surgeon. Such a faw I can now with confidence recommend, after a trial of twenty years, during which time I have rarely used the trephine in fractures of the skull. Its use has been adopted by my colleagues at the General Infirmary in Leeds; and will be adopted, I hope, by every surgeon who has once made trial of it." Mr. Hey next informs us, that the instrument was first shown to him by Dr. Cockell of Pontefract; but that there is a faw, formed on the same principle, in Scullettus's Armamentarium Chirurgicum. The saw alluded to are very short ones, fixed at the end of a long straight handle; their edges are made either straight, or semicircular. The latter construction qualifies the instrument for cutting in a curvilinear direction, which is often proper. The edge of the saw should always be made a little thinner than the rest of the blade, by which means it will work in the groove, which is cut, with more facility.

Saws made on the principle just described, are also of infinite use in cutting away diseased portions of other bones, besides the skull, exostoses, &c. In cases of necrosis, when a dead part of a bone is quite wedged in the substance of the surrounding new bony matter, Mr. Hey's faws may often be advantageously employed for cutting away the parts which mechanically prevent the detachment of the dead

TREPIDATION, in Medicine. See Palsy.

The first symptom of madness in dogs, is a trepidation of the limbs.

TREPIDATION, in Ancient Astronomy, denotes what they called a libration of the eighth sphere; or a motion which the Ptolemaic sytem attributed to the firmament, to account for certain almost inffolent changes and motions observed in the axis of the world; by means of which the latitudes of the fixed stars come to be gradually changed, and the ecliptic seems to approach reciprocally, first towards one pole, then towards the other.

This motion is also called the motion of the first libration.

TREPIGNER, in the Mange, the action of a horse who beats the dust with his fore-feet in mangering, without embracing the volt; and who makes his motions and times short, and near the ground, without being put upon his haunches. This is generally the fault of such horses as have not their shoulders supple, and at liberty, and withal have carelessly any motion with them. A horse may trepigner in going upon a straight line.

TREPONTE, in Geography, a town of Italy, in the Cadorin; 5 miles N. of Cadora.

REPORT, La, a sea-port town of France, in the department of the Lower Seine, situated on the English Channel, at the mouth of the Brefle. This place is the harbour for the town of Eu; from which it is distant about half a league. N. lat. 50° 14'. E. long. 1° 26'.

TREPT le Grand, a town of France, in the department of the Hier; 21 miles E. of Lyons.

TREPTOW, a town of Anterior Pomerania; 50 miles S. of Stralsund. N. lat. 53° 39'. E. long. 13° 10'.

TREPTOW am Rega, or New Treptow, a town of Hinder Pomerania, on the river Rega, which is here made navigable; 16 miles N.E. of Cammin. N. lat. 54° 2'. E. long. 15° 13'.

TREPUZZI, a town of Naples, in the province of Otranto; 22 miles W.N.W. of Liece.

TREO, a river of the Popedom, in the Campagna di Roma, which runs into the Garigliano, near Isolotta.

TERRUS, in Ancient Geography, a country in the environs of Macedonia, in Pieria and Dardania. Phiny.—Alfo, a river of Italy, in Aulonia, which, according to Strabo, watered the town of Fabrateria, situated in Latium.

TRES HERMANOS, in Geography, three small islands in the bay of Honduras, near the coast. N. lat. 10° 20'. W. long. 88° 50'.

TRES Taberna, Three Taverns, in Ancient Geography, a place of Italy, near the Appian way. Zohmsius says that it was the place where the emperor Severus was put to death by Maxentius. The Itin. of Anton. marks its situation in the Appian way, between Aricia and Appii Forum.

TRESA, a river of the northern part of Italy, which ran among the Leptantii, into the lake Verbanus.

TRESANTIT, in Geography, a town of Naples, in Capitanata; 13 miles S. of Manfredonia.

TRESANTON, in Ancient Geography, a river of Albion, probably the river Telch, which falls into Southampton bay.

TRESAYLE, in Law, the name of a writ (now obsolete) to be sued, on ouster, by abatement, on the death of the grandfather's grandfather.

TRESBES, in Geography, a town of France, in the department of the Aude, near the Aude river; 3 miles E. of Carcassonne. N. lat. 43° 13'. E. long. 2° 52'.

TRESCHEN, a town of Germany, in the principality of Culmbach; 4 miles S.S.E. of Culmbach.

TRESCO, or St. Nicholas, one of the Scilly islands. N. lat. 50°. W. long. 6° 45'.

TRESHANISH ISLANDS, a range of four small islands among the Weblen islands of Scotland, between Mull and Coll. They lie in a line, nearly from north to south. They are small, but the soil is generally fertile. N. lat. 56° 30'. E. long. 6° 25'.

TRESNEL, a town of France, in the department of the Aube; 3 miles from Pont-Fur-Seine.—Alfo, a town of France, in the department of the Sarthe; 7 miles W. of St. Calais.

TRESPASS, in Law, signifies any transgression of the law, under treason, felony, or misprision of either.

TRESPASS, however, is most commonly used either for that wrong or damage which is done to the king in his forest, or by one private man to another.

In this sense, it is of two sorts: trespass general, otherwise called trespass vi et armis, where force or violence is used; to which belong threats, affault, battery, mayhem, &c.; and trespass special, otherwise called trespass upon the common; which should be that done without force, or where the injury is only consequential. See Action on the case.

But the two species are sometimes confounded.

Trespass on lands denotes an uttery on another man's ground without lawful authority, and doing some damage, however inconsiderable, to his real property. Every such unwarrantable entry on another's soil, the law entitles a trespass by breaking his close. But in order to be able to maintain an action of trespass, a man must have property in the soil, and actual possession by entry; or at least it is requisite that the party have a leave and possession of the vextare and herbage of the land. But before entry and actual possession, one cannot maintain an action of trespass, though he hath the freehold in law. However, by 4 Geo. II. c. 28. and 11 Geo. II. c. 19. in case after the determination of any term of life, lives, or years, any person shall wilfully hold over the same, the lessor is entitled to recover by action of debt, either a rent or double the annual value of the premises, in case he himself hath demanded and given notice in writing to deliver the possession; or: else double the usual rent, in case the notice of quitting proceeds from any tenant having power to determine his lease, and he afterwards neglects to carry it into due execution.

A man is answerable not only for his own trespass, but that of his cattle also. See Damage of cattle.

In some cases trespass is justifiable; or, rather, entry on another man's land and house shall not in those cases be accounted trespass; as if a man comes there to demand or pay money, there payable; or to execute, in a legal manner, the process of the law. A man may also justify entering into an inn or public-house, without the leave of the owner: a landlord may justify entering to disfrain for rent: a comonomer to attend his cattle, commoning on another's land; and a reviver to fee if any waife be committed on the estate. It hath also been said, that by the common law and custom of England, the poor are allowed to enter and glean upon another's ground after the harvest, without being guilty of trespass; which humane provision feems borrowed from the Mofialic law, Lev. chap. xiv. ver. 9. chap. xxiii. ver. 22. Dent. chap. xxiv. ver. 19. In like manner, the common law warrants the hunting of ravenous beasts of prey, as badgers and foxes, in another man's land. But in cases where a man makes an ill use of the authority with which the law entruits him, he shall be accounted a trespasser ab initio; as if one comes into a tavern and will not go out in reasonable
TRE

reasonable time; so if a landlord detained for rent, and
willfully killed the diffrets, this made him a trespasser ab
initio; and so would any other irregularity have done, till
the statute 11 Geo. II. c. 19, which enacts that no subse-
quently irregularity of the landlord shall make his first entry a
trespass; but the party injured shall have a special action
on the case for the real specific injury sustained, unless
tender of amends hath been made. But still, if a rever-
sioner, who enters on pretence of feering waeke, breaks
the house, or flays there all night; or if the commoner, who
tends his cattle, cuts down a tree; in these and similar cases the
law judges that he entered for this unlawful purpose; and
therefore, as the act which demonstrates such his purpose is
trespass, he shall be deemed a trespasser ab initio. So also
in the case of hunting the fox or the badger, a man cannot
justly break the soil, and digging him out of his earth.

A man may justify an action of trespass, on account of
the freehold and right of entry being in himself; and this
defence brings the title of the estate in question.—And this
is one of the ways devised, since the diflufe of real actions, to
try the property of estates: though not so usual as that by
ejecution, which being a mixed action, gives damages for
the ejection, and possession of the land; whereas in trespass,
which is a personal suit, the right can be only ascertained,
but no possession delivered; nothing being recovered but
damages for the wrong committed.

In an action of trespass, the plaintiff always sues for
damages, or the value of the hurt done him by the
defendant.

In order to prevent trifling and vexatious actions of
trespass, as well as other personal actions, it is (inter aha)
enacted by statutes 43 Eliz. c. 6. and 21 Jac. I. c. 16.
and 22 & 23 Car. II. c. 9. that where the jury who try an
action of trespass gives less damages than 40s. the plaintiff
shall be allowed no more costs than damages; unless the
judge shall certify under his hand, that the freehold or title
of the land came chiefly in question, or that an actual bat-
tery, and not assault only, was proved. And by statute
4 & 5 W. & M. c. 25. and 8 & 9 W. III. c. 11. if the
trespassers were committed in hunting or sporting by an
inferior tradesman, or if it appear to be willfully and malici-
siously committed, the plaintiff shall have full costs, though
his damages, as asfessed by the jury, amount to less than 40s.
Blackst. Comm. vol. iii.

Trespass is also divided into local and transitory.
Trespass, Local, is that which is so annexed to the place
certain, that if the defendant join issue upon a place, and
traverser the place mentioned in the declaration, and aver it,
it is enough to defeat the action.

Trespass, Transitory, is that which cannot be defeated
by the defendant’s traversal of the place, because the place is
not material.

The action of trespass, quaer clamium fregit, ought to be
local.

Tressel of Trestle-Trees, in a Ship, two strong
bars of oak-timber refting on the cheeks of lower-masts, or
hounds of top-masts. To lower-masts they are secured by
being secured and bolted horizontally on the opposite sides
of the mast, fore and aft, and further supported by two bobs
or brackets, as shoulders under them. Topmast treifle-
trees are supported by the hounds only. See Mast-
Making.

Tressness, in Geography, a cape on the south
coast of the island of Sanday. N. lat. 59° 5'. W. long.
2° 25'.

Tresson, a town of France, in the department of the
Sarthe; 15 miles S.E. of Le Mans.

Tressure, in Heraldry, a diminutive of an orie,
usually supposed to be half the breadth of it.

It is usually horse flory and counter-flory; sometimes
double, and sometimes triple.

Trestiana, in Geography, a town of European
Turkey, in Moldavia; 24 miles S.E. of Jassy.

Trestle, Tresesel, or Trest, in Commerce, an allowance made
for the wale, or the duff, that may be mixed with any com-
modity, which is always four pounds in every 104 pounds
weight. See Tar.

This allowance, which is said to be for a tile or a land,
or for the wale or wear of the commodity, was formerly
made on most foreign articles sold by the pound averdoneus; but
it is now nearly discontinued by merchants, or allowed in
the price. It is wholly abolished at the East India ware-
houses in London; and neither trett nor draft is allowed at the
Custom-house. The weight which trett is allowed is
called the “tullie weight.”

Treta, in Ancient Geography, a town of the island of
Cyprus, in the S.W. part of the island, very near Pae-
Paphos, to the S. Strabo places it between Boeisura and the
promontory from which those who were precipitated who
touch the altar of Apollo.

Trete, an island of the Red sea, upon the coast of
Arabia. Ptolemy.

Trets, in Geography, a town of France, in the de-
partment of the Mouns of the Rhone; 12 miles E.S.E. of
Aix.

Tretum, in Ancient Geography, a small town of the
Argolidhe, nearly N. of Argos. In the mountains near
this town was a cavern, which was the abode of a very fierce
lion, which is said to have been slain by Hercules, and
which formed among the poets one of his labours. It was
called the lion of the forest of Nemea, situated near the
town, to the W. of it.

Tretum, or Tritum, a promontory of Africa propria,
on the coast of the gulf of Numidia.

Tretur, in Geography, a small village of South
Wales, in the county of Brecknock; 3 miles N.W. of
Crickhowel.

Trevia, in Ancient Geography, a town in the northern
part of Germany. Ptolemy.—Also, a town of Italy,
in Flaminia, watered by the river Clytumnus.

Trevannion’s Island, in Geography, an island in
the Southern Pacific ocean, and one of the cluster called Queen
Charlotte’s islands, discovered by captain Carteret in 1767,
near the coast of Egmont island, or New Guernsey, in a bay
called Trevannion’s Lagoon. S. lat. 10° 43’. E. long.
163° 43’.

Treucltlingen, a town of Germany, in the
margravey of Anspach, on the Altmuhl; 28 miles S.S.E.
of Anspach.

Treuken, or Dreyen, a town of Saxon, in the
Vogtland; 9 miles E.N.E. of Plauen.

Treuenbrietzen, a town of the Middle Mark of
Brandenburg. This town was surrounded with walls in
the year 1296. It was at first simply called Brixen, but
for its fidelity to the margrave Louis the Roman, was ho-
noured
noted with the epithet of Trucen, or faithful. In the year 1641, this town was laid waste by the Swedes; 20 miles S. of Brandenburg. N. lat. 52° 8'; E. long. 12° 47'.

TREVENN'S ISLAND, or Roopöat, a small island in the Pacific ocean, discovered by lieutenant Herget, in the Dádusse shore-ship, in 1792. S. lat. 9° 4'. E. long. 22° 21'.

TREVIRI, or TREVIRI, in Ancient Geography, a people who occupied an extensive territory of Germany, from the Meuse to the Rhine. Of Treveri Caesar says, "haec civitas Rheum tangit;' and the bridge constructed over the Rhine secures the bank on which this city was situated. The present Treves answers to the ancient position of Treveri. See Treves.

TREVES, in Geography, lately an archbishops and elector of Cologne; on the W. by the eflates of the electors palatine, and of the house of Nassau; on the S. by France; and on the W. by the duchy of Luxembourg: about eighty miles in length, but of very uncertain breadth. The country is in general mountainous and woody, containing, indeed, good pasturage for cattle, and in many places also fruitful arable land, but yet stands in need of the importation of corn; on the contrary, the growth of wine on the Mosel is very considerable, with plenty of game. There are likewise mineral springs, and mines of coal, calamine, iron, copper, lead, tin, silver, and gold. The electoral subjects are Roman Catholics, but in some other places which the elector of Treves is privileged of in common with other houses, there are like wise Protestants. The ancient Téviri, from whom the principal town here, and the country also, had its name, were, till the fourth century, subject to the Romans, and afterwards to the Franks. In the divisions which the sons and posterity of the emperor Louis I. had made, this country was added, in the year 855, to the kingdom of Lorraine, and in 870, fell to the house of Louis, the German king, ever since which time it has continued annexed to Germany. The church of Treves, however, is held to be the most ancient in Germany. An archibishop of Treves was elected by the chapter there, and swore to a capitulation proposed by them. The pope confirmed such election in the usual manner, empowering one of the new elected bishops, allotted for that purpose, to consecrate him. The archbishop of Treves was in rank the second spiritual elector. At the election of an emperor, he delivered the formula of the election-oath to the elector of Mentz, to be sworn to by him; and he had also the first voice. As elector, the archbishop of Treves enjoyed both seat and voice in the electoral council at the diets of the empire. The suffragans of the archbishop of Treves were the bishops of Metz, Toul, and Verdun. The chapter of Treves consisted of forty canons, among whom were sixteen capitulars, and twenty-four domicii. The archbishops had regular troops, and a land militia. The former of these consisted, in times of peace and ordinarily, only of the circle troops, which the elector of Treves was bound to maintain, and which amounted to between 1100 and 1200 men. The elector also kept up a life-guard of forty persons. By the treaty of Luneburg, the archbishopric and the electorate are no more: and that part of the territories which lay on the left bank of the Rhine is annexed to France, composing chiefly the department of the Sarre. The principal part of the electorate lying on the right side of the Rhine was, in 1802, given as an indemnity to the prince of Nassau-Weilburg.

TREVI, a town of Italy, in the duchy of Spoleto, anciently called Mutiae and afterwards Trebula; 6 miles N. of Spoleto. — Alfo, a town of the Popedom, in the Campagna di Roma; anciently the see of a bishop, erected about the year 1000, but in the year 1260 united to Anagni; 32 miles E. of Rome.

TREVICO, a town of Naples, in Principato Ultra; the see of a bishop, suffragan of Benevento; 14 miles N. of Conza. N. lat. 41° 6'. E. long. 15° 14'.

TREVIERES, a town of France, in the department of the Calvados; 12 miles E. of Carentan.

TREVIGIO, or TREVISIO, a city of Italy, capital of the Trevisian, situated at the confluence of the Sile and the Piave; the see of a bishop, suffragan of Udine. An university was founded here, and afterwards removed to Padua. The town is three miles in circumference, and contains 2500 houses and 22,000 inhabitants; whom the culture of silk, the silk and woollen manufacturies, and particularly the annual fair in the month of October, supply with abundant means of subsistence. Besides the cathedral, the town contains 16 parochial churches, 11 monasteries, 10 nunneries, 4 hospitals, and a pawn-bank. The streets and public squares are in general
TREW, Christopher James, in Biography, a physician and naturalist, was born at Lauffen, in Franconia, in 1695, and settled at Nuremberg, where he gained medical and literary reputation, so as to be made director of the academy "Nature's Curiatorium." He also contributed much towards establishing a society under the title of "Commercum Literarium Nomicum ad Rei Medicæ et Scientiarum Incrementum institutum," which published its memoirs. To these societies he communicated several papers, and he also published several splendid works in anatomy and botany. Among others, we may enumerate the following: "De Differentiis quibusdam inter Hominem natum et natuendo intercedentibus," 1736, 4to.; "Epitola ad Alb. Hallerum de Vitis Lingue salivalibus et fanguiferis," 1734, 4to.; "Tabulae Osteologice Corporis Humani," fol. max. with coloured plates, 1767. In 1750 he commenced his publication of one of the most splendid of the imitations of Flora, under the title of "Planta Selecæ, quorum Imagines pinxit G. Dionysius Ehret." To the incomparable designs of Ehret, Trew added descriptions and remarks; and the work appeared in decades, few of which were completed. In the same year he began a similar publication of garden flowers, intitled "Amoenissirne Florum Imagines," which was carried on to six decades. He also published an improved edition of Blackwell's Herbal, in English and German, with an addition of some plants. Being in possession of Gnefner's wooden plates, he gave an impression of 216 figures of plants from them, intitled "Icones posthumae Gnerferiana," 1748. Trew died in 1769. Haller. Eloy.

TREWARDRETH BAY, in Geography, a bay in the English Channel, on the south coast of Cornwall; 3 miles W. of Fowey, N. lat. 50° 18'. W. long. 4° 42'.

TREWIA, in Bokany, was so named by Linneaus, at the end of his Genera Plantarum, in honour of Christopher James Trew, an opulent physician at Nuremberg, who has distinguished himself as the editor of some of Ehret's figures, in the most splendid style, with learned descriptions and explanations of his own, under the title of Planta Selecæ. Of a similar character are his Florum Imagines, in six decades. His improved edition of Mrs. Blackwell's Herbal, in German, with valuable additions, has proved acceptable to his countrymen; as have his numerous botanical and physiological essays, published chiefly in the Commercum Literarium at Nuremberg, between the years 1730 and 1746, to the scientific world in general. He is charged by Ludwig, in a letter to Haller, with undertaking more than he could accomplish; nor does he stand in the highest rank of correct and philosophical botanists. He died in 1769, aged 74. (See Trew.—) Linn. Gen. 580. Schreb. 354. Wild. Sp. Pl. v. 4. 834. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 466. Jull. 442. Lamarck Illustr. t. 466. (Tetragastris; Gerinl. p. 109. Rottlera; Willd. in the Goettingen Journ. of Nat. Hist. v. 1. 8. Mallotus; Loureir. Cochinch. v. 2. 635.)—


Female, Cal. Perianth inferior, of one leaf in three or four segments. Cor. none. Fil. Germin superior, roundish; style short; stigmas three, very long, feathery on the upper side. Peric. Capsule turbinated, somewhat globular, of three or four lobes and as many cells, with twice as many valves. Seeds solitary, pendulous, angular on one side, convex on the other.

Eff. Ch. Male, Calyx of three leaves. Corolla none. C c

Female,

Obi. We believe the several genera, cited above, are here very properly united; see Mallotus and Tetragastris. The natural number in every part of the female fructification is probably three, though varying to four in the original species. Linnaeus was but ill acquainted with this genus, nor does it appear that he ever examined a specimen.

1. T. nudiflora. Smooth-leaved Trevia. Linn. Sp. Pl. 1661. Willd. n. 1. Ait. n. 1. (Rottleri indica; Willd. as above t. 3, Canchi; Rheede Hort. Malab. v. 1. t. 76. t. 42.)—Leaves ovate, undivided, entire, smooth on both sides.—Native of the East Indies, in sandy ground. It has been introduced into the faves at Kew, but has never yet flowered. This is a tall tree, whose trunk is two or three feet in diameter; its branches numerous, round, smooth, with a filamentous bark. Leaves alternate, on long smooth stalks, broadly ovate, taper-pointed, three or four inches long, with three principal nerves, and many smaller ones, connected by fine transverse parallel veins, and numerous minute reticulations. Male flowers numerous, in axillary aggregate clusters, three or four inches long, greenish-white; sometimes, according to Rheede, four-cleft. Calyx externally downy, about two lines long. Female flowers on a separate tree, likewise axillary, but rarely more than two together, on a long stalk. Their calyx is either very small, or soon deciduous. Fem., not so large as a pepper-corn, hoary. Style about as long as the calyx, thick, hoary. Stigmas three or four, spreading, an inch long, densely covered along their upper side with feathery glands. Capsule rather depressed, slightly lobed, smoothish, of three or four cells.

2. T. tricuspidata. Three-pointed Trevia. Willd. n. 2. (Mallotus cochinchinensis; Loureir. Cochinch. 635.)—Leaves ovate, downy and toothed; generally three-pointed.—For the history of this species we refer the reader to Mallotus.

3. T. pubescens. Downy Trevia.—Leaves ovate, undivided, entire, downy on both sides. Female flowers somewhat capitate, with ovate pointed bracteas.—A female specimen of this was sent us by the late Dr. Roxburgh, as an unknown tree from Amboya. The shape and reticulations of the leaves, with the general habit of the plant, are so like the first species, that we feel confident of their being of the same genus. The branches and footstalks however, and the under side of the leaves, are densely clothed with soft velvety-like pubescence; the upper side of the latter is less downy. Near the base of each footstalk a pair of awl-shaped, very downy, deciduous stipules. Female flowers on simple, axillary, solitary, downy stalks, rather longer than the footstalks, composing small roundish heads, accompanied by four or five somewhat alternate, ovate, pointed, slightly toothed, downy bracteas, an inch long. Each flower appears to have a short partial flalk, which is very hairy, and the germen is no less briefly; inasmuch that we can but imperfectly develop the structure of the flower. The figmas however are large and conspicuous, exactly those of a Trevia; but there is some appearance of their being solitary. Possibly some may have fallen off. We are unacquainted with the male of this species.

4. T. difcolor. White-leaved Trevia.—Leaves ovate, entire; densely downy and white beneath. Communicated by Lamarck to the younger Linnaeus, along with several other plants from the East Indies, but without any name, or indication of its native country. We presume it to be the male of a nondefcript species of Trevia. The form and veins of the leaves strongly indicate this; but their under fide differs from that of the reft, in being covered with the finest depressed, mealy or scaly, snow-white pubescence; while the upper is very smooth to the touch, appearing minutely granulated under a magnifier only. The branches and all the flalks are finely hoary, and, in the dried specimem at leat, have a ruddy hue. Panicle terminal, composed of numerous, alternate, racemose, many-flowered branches. Unexpanded male flowers about the size of a mustard-feed, downy, on short partial flalks. It is evident we can have no certainty at present of the genus of this plant, but there is the greatest probability of its being rightly placed here.

TREYA, in Geography, a town of Denmark, in the duchy of Sleswick; 9 miles W. of Sleswick.

TREYSA, a town of Welfphalia, in the principality of Hesse. In the year 1646, this town was burned down by the Imperialists; 26 miles S. of Caffel. N. lat. 50° 54'. E. long. 9° 10'.

TRIA PRIMA, among Chemists, the three hypoftaltic principles, viz. falt, fulphur, and mercury; of which they hold all bodies to be primarily made, and into which they are all held refolvable by fire.

TRIAD, TRIAS, 7035. See TERNARY, TRIAS, and TRINITY.

TRIADICA, in Botany, from 703, 7030, ternary, alluding to the prevalence of the number three in the fructification; which however is not very remarkable. —Loureir. Cochinch. 610.—Clafs and order, Dioecia Diantria. Nat. Ord. Amenaceae, Linn. Jull.


1. T. cochinchinensis. Cây Soi tia, or Cây Cha dam, of the Cochchine. —Leaves ovate, obtuse.—Found in the woods of Cochchina. A large tree, with spreading branches. Leaves alternate, ovate, entire, smooth, on long red footstalks. Flowers nearly terminal. Berries small, of a brownish green.

2. T. lunifera. U Khu mo of the Chinefe. —Leaves roundish, pointed. —Wild about Canton in China. A large tree, with spreading branches. Leaves alternate, stalked, smooth, entire. Catkins, of the male as well as female flowers, four-cleft. Seeds tunicated. Of this last circumftance nothing is faid in the generic character. —We are not acquainted with any plants answering to the above defcription. Antidesma perhaps (see that article and Stilago) comes the nearest, especially when we contemplate the Stilago diandra of Roxburgh. If allowance be made for some occasional abortion in the cells of the fruit, or if we ourselves have misconceived Loureir's ambiguous defcription, "bcna tribulatiris, monosperma," Triadica may be no other than Antidesma.


Gen. Ch. Cal. a glume of two unequal, lanceolate, keeled,
TRI

keeled, pointed, membranous valves, containing one floret; the outer valve full half the size of the inner, with a rough dorsoal awn, about its own length, united to it half way up. Car. of two unequal, lanceolate, keeled, pointed, membranous valves; the outermost largest, three-ribbed, awnless; innermost narrower, with two keels, and a dorsoal awn, twice its own length, of three equal points, and a common stalk the length of the glume, slightly connected therewith at the base only. Stam. Filaments three, capillary, shorter than the glumes; anthers hanging out of the flower, linear, notched at each end. Pif. German superior, ovate; styles two, thread-shaped, short; stigmas oblong, feathery. Peric. none, except the unconnected corolla. Seed one, ovate.

Eff. Ch. Calyx single-flowered, of two valves, with a dorsoal awn. Corolla of two valves, unconnected with the feed, and a dorsoal awn of three points.

1. T. racemosa. Cluster-flowered Trident-grafs. Kunit as above, 179. t. 61.—Gathered by Humboldt and Bonpland, in dry cultivated ground in Mexico, between Guanaxuato and Villapalido, flowering in September. This is an annual, upright, branching grafs, about eighteen inches high, with a round, smooth, slender, jointed stem. Leaves linear, narrow, sheathing, flat, frilled, rough on both sides, and somewhat hairy on the inner: their sheaths frilled, smooth. Stipula very short, fringed. Clusters terminal, solitary, simple, erect, from one and half to four inches long. Flowers alternate, two-ranked, on short, slender flanks.—We have presumed to alter the original description, chiefly with respect to the three-pointed awn, which Mr. Kunit considers as an abortive floret. The analogy of Triathera (see that article) will fully authorize this alteration.

TRIAL, in Law, the examination of any cause, civil or criminal, according to the laws of the realm, before a proper judge.

Of this there are divers kinds: both in civil and in criminal cases. In civil cases there are seven species of trial, viz. by record: by inspection or examination, when, for the greater expedition of a cause, in some point or point being either the principal question or arising collaterally out of it, but being evidently the object of the cause, the judges of the court, upon the testimony of their own fenses, shall decide the point in dispute; as in case of a suit to reheve a fine for non-age of the cognizor, or to set aside a statute or recognizance entered into by an infant, the king's justices determine, by view of the age of the party; also if a defendant pleads in abatement of the suit that the plaintiff is dead, and a person, calling himself the plaintiff, appears, the judges shall determine by inspection whether he be the plaintiff or not; likewise in the case of an idiot; in the appeal of mayhem; and in determining circumstances relative to a day palt by inspection of an almanac: by certificate, as for matters without the realm, and also within the realm: the customs of the city of London are tried by the certificate of the mayor and aldermen, certified by the mouth of their recorder: marriage, bastardy, excommunication and orders, and other such matters, are tried by the bishop's certificate: ability of a clerk preferred, admission, instruction and deprivation of a clerk, shall be tried by certificate from the ordinary or metropolitan; and the customs of courts by certificate from the proper officers, &c.: by waives: by waiver of battle: by waiver of law: and by jury. In criminal matters, there was formerly the trial by ordeal and by certification: these two methods of trial were chiefly in use among our Saxon ancestors, and are now antiquated; the next, which still remains in force, though very rarely in use, was introduced among us by the princes of the Norman line, and is the trial by battle, duel, or single combat: the fourth method of trial used in criminal cases is that by the peers of Great Britain, in the court of parliament, or the court of the lord high steward, when a peer is capitally indicted: but that which most commonly occurs is the trial by jury, or the country, secured to every Englishman, as the great bulwark of his liberties, by the Great Charter. Blackfi. Comm. vol. iii. &c. vol. iv. &c.

Before trial, in a criminal case, it is usual to ask the criminal how he will be tried? which was anciently a very pertinent question, though not so now; in regard there were formerly several ways of trial: viz. by battle, ordeal, and jury.

When the criminal answered, By God and his country, it showed he made choice to be tried by a jury. But there is now no other way of trial. This is also called trying per pais, or per patriam.

TRIAL, New, is a re-hearing of the cause before another jury, with as little prejudice to either party, as if it had never been heard before. The causes of granting a new trial are such as these: want of notice of trial; or any flagrant malbehaviour of the party prevailing towards the jury, which may have influenced their verdict; or any gross malbehaviour of the jury among themselves: also if it appears by the judge's report, certified to the court, that the jury have brought in a verdict without or contrary to evidence, so that he is reasonably dissatisfied therewith; or if they have given exorbitant damages; and if the judge himself has misdirected the jury, so that they found an unjustifiable verdict: for these, and other reasons of the like kind, it is the practice of the court to award a new, or second trial. But if two juries agree in the same or a similar verdict, a third trial is seldom awarded; for the law will not readily suppofe, that the verdict of any one subsequent jury can counterbalance the oaths of two preceding ones. There are influences of new trials in the year-books of the reign of Edward III., Henry IV., and Henry VII., &c. Blackfi. Comm. vol. iii. &c.

TRIAL, Jean Claude, in Biography, director of the royal academy of music at Paris, and master of the prince of Conti's band, was born in 1734, in the Contat, that country so agreeable and fertile in excellent artists. The fine arts are generally inhabitants of beautiful nature.

At twelve years old, Trial quitted Avignon, in order to acquire knowledge from different masters whom he intended to visit. His talents were so extraordinary for his age, that at fifteen he was appointed director of the concert and opera of Montpellier. The passion which he had for the arts drove him to Paris, where he no sooner arrived, than he was placed at the head of the orchestra at what was then called the Italian theatre, or comic opera. From this orchestra he passed to that of the prince of Conti, of which he was appointed director; and his conduct and manners were such in that office, that on his death the prince designed to say that he had lost a friend.

The protection with which he was honoured, procured him the important place of director of the Academie Royale. Permit us here to define the office of director of the academy of music, or serious opera. The management of the opera is a painful and embarrassing administration. It is necessary for the director of this complicated machine to attend to all the springs, to dissipate all impediments to their action, plant the table and sometimes the caprice of the inconstant public, unite to a point of concord very rarely attainable, a crowd of various and often rival talents, excite emulation without awakening jealousy, distribute rewards with justice.
justice and delicacy, cenure and punish with address, limit the unbounded demands of some by flattery, check the independence of others by apparent concessions, and try to establish in the interior government of this republic as much harmony as reigns in the orchestra. It is manifest that nothing but the most sublime, artful, and plant character can hope to accomplish such Herculean labours.

The time necessary for such a ministry, did not allow Trial leisure for pursuing composition with the ardour and application with which he began his career. During his regency at the opera he composed but little, and that was generally in partnership with others.

In 1770 he was found dead in his bed, without any previous illness or warning. He married, in 1769, Mademoiselle Victoire, well known for her wit and talents, with whom he lived in the utmost harmony. A good son, a good husband, a good brother, and good friend.

His funeral manifested how much he was beloved; every one who attended it was in tears: no funeral oration is equal to such tears; for they are never shed but for objects worthy of them. Flattery lies, but never weeps.

**TRIAL Point**, in Geography, a cape on the south-east coast of the island of Jura. N. lat. 55° 54'. W. long. 5° 52'.

**TRIALETE**, a town of the principality of Carthage, in the province of Carduel; 40 miles S.W. of Gori.

**TRIAMBHO**, in Hindoo Mythology, a name of the Hindu god Siva, who corresponds in many points with the primary deities of the Pantheon of Greece and Rome. The name of Triambho seems to connect him with Dionysus or Bacchus; for after the conquest of India, we are told by Diodorus that the Greek deity assumed the title of Triambo. One of the names of Siva is Baghefa; resembling that of the conqueror of India sufficiently nearly for etymological hypothesis to found an argument on, especially when points of character and attributes also correspond. (Of these see under our articles KARTIKYA and Siva.)

The signification of the title Triambho is not evident. Siva has several names allusive to his triple attributes and energies. Trilokan and Triinctra, for instance, mean with three eyes; Trifungi, with the trident; Triskal, or omnipresent; that is, exiling in all times, the past, the present, and the future. See those articles, and TRIMURTI.

**TRIANA**, in Geography, one of the faubourgs of the city of Seville.

**TRIANDRIA**, in Botany, the third clas of the sexual, or artificial, system of Linnaeus, derives its name from having three unconnected stamens, in the same flower with the pistil, or pistils. This class is chiefly composed of what are termed monocotyledonous plants, the number three, or its double quantity, fixed, prevailing as much in that tribe, as the number five does in the dicotyledonous families. See PENTANDRIA.

The orders of this third clas are three. 1. **Monogynia**, opening with the dicotyledonous and ambiguous genus Valeriana, some of whose species have but one stamen, though most have three. The sword-leaved plants (see ENSATE) follow; and then the Calamaria, or grass-like genera of Schoenus, Cyperus, Scirpus, and their allies. 2. **Digynia** consists of the true grases; see GRAMINA. Some of these, indeed many of them occasionally, have abortive or male flowers interpersified with the perfect ones, and are for that reason placed by Linnaeus in his clas Polygynia. This incapacity, as we have often had occasion to observe, is attended with much inconvenience in various cafes, though in none more than the present. 3. **Trigynia**, a small order, is made up, for the most part, of very limited genera of the pink tribe, Caryophyllae, a tribe which, by its close relationship to the Astrilipes and Amaranthi of Julliff, tends, as that great writer candidly observes, to invalidate the distinction between his apetalous and polyptetalous classes. It at least causes too great a separation in his fylem between orders nearly akin.

**TRIANDRIA** is moreover the title of a few orders of the Linnaean system; as the first of the Monandia, consisting chiefly of sword-leafed genera; the third of Gynandria, which perhaps has scarcely any real existence; the third of Monocot, containing Carex and Sparganium, with some tricoccos genera; and the third of Dioecia, formed of some rulhy, and some anomalous plants.

**TRIANGLE**, in Geometry, a figure comprehended under three lines or sides, and which, of consequence, has three angles.

If the three lines or sides of the triangle be all right, it is said to be a plane or rectilinear triangle.

If all the three sides of the triangle be equal (as A B C, Plate XV. Geometry, fig. 5.) it is said to be equilateral.

If only two of the sides of the triangle be equal (as in D E F, Plate VIII. fig. 105.) it is called an isosceles or equilateral triangle.

If all the sides of the triangle be unequal to each other, (as in A C B, Plate XV. Geometry, fig. 6.) the triangle is said to be scalene.

If one of the angles, as K (fig. 7.) of a triangle KML is a right angle, the triangle is said to be rectangular.

If one of the angles, as N (fig. 8.) be obtuse, the triangle is said to be obtuse-angled, or ambygonous.

If all the angles be acute, (as in A C B, Plate XV. Geometry, fig. 5.) the triangle is said to be acute-angled, or oxygonous.

If the three lines of the triangle be all curves, the triangle is said to be curvilinear.

If some of the sides be right, and others curve, the triangle is said to be mistilinear.

If the sides be all arcs of great circles of the sphere, the triangle is said to be spherical.

**TRIANGLES**, Similar. See **SIMILAR**.

**TRIANGLE**, Characteristic of a curve. See **CURVE**.

**TRIANGLE**, Bases, Canon, Hypotenuse, Legs, and Rightness of. See the several articles.

**TRIANGLES**, Construction of. 1. Two sides, as A B and A C (Plate XV. Geometry, fig. 9.) being given in numbers, or otherwise, together with the quantity of the angle intercepted between them, A; to construct a triangle. Assume A B as a base; and in A make the given angle: on the other leg set off the other given line A C; lastly, draw B C: then well A B C be the triangle required.

Hence, two sides with the intercepted angle being determined, the whole triangle is determined. Wherefore, if in two triangles A B C and a e b; a = A; and a b : a e : A B : A C, the triangles are determined in the same manner, and are therefore similar; consequently e = C, and b = b : e : b ; A B : B C, &c.

2. Three sides, A B, B C, and A C (Plate XV. Geometry, fig. 5.) being given, any two of which, as A C, A B, taken together, are greater than the third: to construct a triangle. Assume A B for a base; and from A, with the interval A C, describe an arc y; and from B, with the interval B C, describe another arc x: draw the right lines A C and B C. Thus is the triangle constructed. Hence, as of any three given right lines, only one triangle can be constructed; by determining the three sides, the whole triangle is determined.

Wherefore,
TRIANGLE.

Wherefore, if in two triangles $A\underline{B}C$ and $a\underline{b}c$ (Plate XV. Geometry, fig. 9.) $A\underline{B}C:AB:ae:a\underline{b};A\underline{C}:CB:ac:b\underline{c};$ the triangles are determined in the same manner, and consequently are similar, and therefore mutually equiangular.

3. A right line, as $A\underline{B}$, and two adjacent angles $A$ and $B$, which, taken together, are less than two right ones, being given, to describe the triangle $A\underline{B}C$. On the given line $A\underline{B}$, make the two given angles $A$ and $B$: continue the sides $A\underline{C}$ and $B\underline{C}$, till they meet in $C$. Then will $A\underline{B}C$ be the triangle required.

Hence, one side and two angles being given, the whole triangle is determined. Wherefore, if in two triangles $A= a$ and $B= b$, the triangles are determined after the same manner, and therefore are similar.

**Triangles, Menfuration of.** To find the area of a triangle, multiply the base $A\underline{B}$ (fig. 10.) by the altitude $C\underline{d}$; half the product is the area of the triangle $A\underline{B}C$.

Or thus; multiply half the base $A\underline{B}$ by the altitude $C\underline{d}$; or by the whole base by the half the altitude; the product is the area of the triangle.

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2) 800028  40014  40014 area

See Quadrature.

Or, the area of any triangle is had by adding all the three sides together, and taking half the sum; and from that half sum subtracting each side severally, and multiplying that half sum and the remainder continually into one another, and extracting the square root of the product.

Hence, 1. If between the base and half the altitude, or between the altitude and half the base, be found a mean proportional; it will be the side of a square equal to the triangle.

2. If the area of a triangle be divided by half the base, the quotient is the altitude.

**Triangles, Properties of Plane.** 1. If in two triangles $A\underline{B}C$ and $a\underline{b}c$ (fig. 9.) the angle $A$ be $a\underline{d}$; and the sides $A\underline{B}= ab$, and $A\underline{C}= ac$; then will the side $B\underline{C}= bc$, and the angles $C= c$, and $B= b$; and therefore the whole triangles will be equal and similar.

2. If one side of a triangle $A\underline{B}C$ (fig. 11.) be continued to $D$, the external angle $D\underline{A}B$ will be greater than either of the internal oppolite ones $B$ or $C$.

3. In every triangle, the greatest side is opposed to the greatest angle, and the least to the least.

4. In every triangle, any two sides taken together are greater than the third.

5. In two triangles, if the several sides of the one be respectively equal to the sides of the other, the angles will likewise be respectively equal; and consequently the whole triangles will be equal and similar.

6. If any side, as $B\underline{C}$ (fig. 12.) of a triangle $A\underline{B}C$ be continued to $D$, the external angle $D\underline{A}B$ will be equal to the two internal oppolite ones $y$ and $z$ taken together.

7. In every triangle, as $A\underline{B}C$, the three angles $A$, $B$, $C$, taken together, are equal to two right ones, or $180^\circ$.

Hence, 1. If the triangle be rectangular, as $M\underline{K}L$ (fig. 7.) the two oblique angles $M$ and $L$, taken together, make a right angle, or $90^\circ$; and therefore are half right, if the triangle be isosceles. 2. If one angle of a triangle be oblique, the other two taken together are oblique likewise. 3. In an equilateral triangle, each angle is $60^\circ$.

4. If one angle of a triangle be subtracted from $180^\circ$, the remainder is the sum of the other two; and if the sum of two be subtracted from $180^\circ$, the remainder is the third.

5. If two angles of one triangle be equal to two of another, either together or separately, the third of the one must be likewise equal to the third of the other. 6. Since in an isosceles triangle $D\underline{F}E$ (Plate VIII. fig. 105.) the angles at the base $y$ and $z$ are equal; if the angle at the vertex be subtracted from $180^\circ$, and the remainder be divided by 2, the quotient is the quantity of each of the equal angles: in like manner, if the double of one of the angles at the base be subtracted from $180^\circ$, the remainder is the quantity of the angle at the vertex. See ISOSCELES Triangle.

8. If in two triangles $A\underline{B}C$ and $a\underline{b}c$ (Plate XV. Geometry, fig. 9.) $A\underline{B}= a\underline{c}$, $A= a$, and $B= b$; then will $A\underline{C}= a\underline{c}$, $B\underline{C}= bc$, $C= c$, and the triangle $A\underline{C}B$ equal and similar to the triangle $a\underline{b}c$. Hence, if in two triangles $A\underline{C}B$ and $a\underline{b}c$, $A= a$, $B= b$, and $B\underline{C}= bc$, then will $C= c$; consequently $A\underline{C}= a\underline{c}$, $A\underline{B}= a\underline{b}$; and the triangle $A\underline{C}B= a\underline{b}c$.

9. If in a triangle $D\underline{F}E$, the angles at the base $y$ and $z$ (Plate VIII. Geometry, fig. 105.) be equal, the triangle is isosceles: consequently, if the three angles be equal, it is equilateral.

10. If in a triangle $A\underline{B}C$ (Plate XV. fig. 14.) a right line $D\underline{E}$ be drawn parallel to the base $A\underline{C}$, then will $B\underline{C}= BD$, $B\underline{D}= BE$, $A\underline{D}= EC$, and $B\underline{A}= AC$, $B\underline{D}= DE$; consequently the triangle $B\underline{D}E$ is similar to $B\underline{A}C$. And, vice versa, a right line, which divides two sides of a triangle proportionally, is parallel to the remaining side. Moreover, if another right line $F$ is also drawn parallel to the base $A\underline{C}$, the intercepted parts, $D\underline{F}$, $E\underline{G}$, are in the same ratio with the whole sides $A\underline{B}$, $C\underline{B}$; i.e. $D\underline{F}:E\underline{G}= A\underline{B}:C\underline{B}$. And if any number of lines be drawn parallel to the base, cutting the sides of a triangle, every two corresponding segments will have the same ratio.

11. Every triangle may be inscribed in a circle.

12. The side of an equilateral hexagon, inscribed in a circle, is equal to the radius.

13. Triangles on the same base, and having the same height, that is, being between the same parallel lines, are always equal. See PARALLELOGRAM.

14. Every triangle, as $C\underline{A}D$, (Plate X. Geometry, fig. 14.) is one-half of a parallelogram $A\underline{C}DB$ on the same, or an equal base $C\underline{D}$, and of the same altitude, or between the same parallels: or a triangle is equal to a parallelogram upon the same base, but half the altitude; or half the base, and the same altitude. See PARALLELOGRAM.

15. In every triangle, as well plane as spherical, the sides or lines of the sides are proportional to the lines of the opposite angles.

16. In every plane triangle, as the sum of two sides is to their difference, so is the tangent of half the sum of the opposite angles, to the tangent of half their difference. See TANGENT.

17. If a perpendicular be let fall upon the base of an oblique-angled triangle, the difference of the squares, or, the rectangle under the sum and difference, of the sides is equal to double the rectangle under the base, and the distance of the perpendicular from the middle of the base.

18. The double of the square of a line drawn from the vertex to the middle of the base of any triangle, together with
with double of the square of the semi-bafe, is equal to the
squares of both the sides taken together.
19. A whole triangle is to a triangle cut off by a right
line, as the rectangle under the sides cut off is to the right
angle of the two sides.
20. In a right-angled plane triangle ADE (Plate X.
Geometry, fig. 17.) a line DB drawn from the right
angle or the vertex, perpendicular to the hypotenuse, divides
the triangle into two other right-angled triangles, ADB,
DBE, which are similar to the first triangle, and also to one
another.

Hence it follows: 1. That \( \frac{\text{ED}}{\text{DB}} = \frac{\text{BD}}{\text{BA}} \) and
\( \frac{\text{AE}}{\text{ED}} = \frac{\text{ED}}{\text{EB}} \) and \( \frac{\text{AE}}{\text{AD}} = \frac{\text{AD}}{\text{AB}} \).
(See Proportional.) Whence, 2. As the angle in
a semicircle is a right angle, it follows that, if from any
point D in the periphery of a semicircle ADE, a perpen-
dicular DB is let fall upon the diameter AE, and from the
fame point D, to the extremities of that diameter, two
chords DA, DE, be drawn; the square of that perpen-
dicular will be equal to a rectangle under the two feg-
ments of the diameter; and the square of each chord
equal to a rectangle under the whole diameter and its
adjacent fegment; i.e., \( \text{BD}^2 = \text{BE} \times \text{BA} \) ; \( \text{ED}^2 = \text{EB} \times \text{EA} \); and \( \text{AD}^2 = \text{AB} \times \text{EA} \).
21. In every right-angled triangle, the square of the
hypotenuse is equal to the sum of the squares of the other
two fides. See Hypotenuse and Subtense.
22. If any angle of a triangle be bifefted, the bifefting
line will divide the oppofite fide, in the fame proportion
as the legs of the angle are to one another.
23. If the vertical angle of any triangle be bifefted, the
difference of the rectangles, made by the fides and the
fegments of the bafe, is equal to the square of the line that
bifefts the angle. Thus, if a right line B E (Plate XV.
Geometry, fig. 15.) bifeft an angle ABC of a triangle,
the square of the faid line \( \text{BE} = \text{AB} \times \text{BC} - \text{AE} \times \text{EC} \).
24. To divide a triangle into any given number of equal
parts; divide the bafe CD (fig. 16.) into as many equal
parts as the figure is to be divided into; and draw the lines
A1, A2, &c.
25. If in similar triangles from any two equal angles to the
oppofite fides two right lines be drawn, making equal
angles with the homologous fides; thofe right lines will
have the fame ratio as the fides on which they fall, and
also divide thofe fides proportionally.
26. If in two triangles having one fide common to both,
from any point in that fide, two lines refeptively parallel
to two contiguous fides be drawn, terminating in the two
remaining fides, thofe lines will have the fame ratio as the
fides to which they are parallel. Hence, if thofe fides are
equal, thofe lines will be alfo equal.
27. If through any point within a triangle three right
lines be drawn, from the angular points to cut the oppofite
fides, the fegments of any one fide will be to each other, as
the rectangles under the fegments of the other fides taken
alternately. Hence if the former fegments be equal, the
forementioned rectangles will be equal, and therefore
the fides of the triangle cut proportionally, and a line connect-
ing the points of division will be parallel to the bafe.
28. Triangles having one angle in the one equal to one
angle in the other, are in the ratio of the rectangles
contained under the fides, including the equal angles. Hence,
if the rectangles be equal, or the fides reciprocally propor-
tional, the triangles will be equal.

Triangles, Properties of Spherical. See Spherical
Triangle.

Triangles, Solution of. See Trigonometry.

Triangle, an iron military instrument with three fides,
which ferves as an accompaniment to other instruments in
a military band, and in the streets: the performer supports
it by a ring at the top with his left hand, and beats it with
a small iron rod in his right hand. At the lowest angle iron
rings are placed, which by their vibration augment the
sound.

Triangle Island, in Geography, an island of South Ame-
rica, in the mouth of the Oronoko, where the French fettled
a factory in the year 1765.—Alfo, one of the fmalier Ba-
hama islands, fo called. N. lat. 26° 51', W. long. 69° 53'.

Triangles, a dangerous fhool in the East Indian lea,
near the N. coast of the Pracel, or Prafil.

Triangles, Southern, a reef of rocks and iflets in the
bay of Honduras. N. lat. 17° 45'. W. long. 88° 42'.

Triangular Apple-Ladder, in Rural Economy, a
ladder of this fort for gathering apples from the trees
with eafe and without bruifing them. It is about eighteen
feet in height, and has two other branches, which are each
of the fame length, faftened by iron hoops or rings at its
top-part. These parts all diverge from each other when the
ladder is in ufe, and appear fomewhat in the manner of the
corner rafters of a triangular roof, forming a fort of tri-
gle. At about four feet from the ground, each branch
and the ladder part has a hook fixed to it, for the purpoce
of fretching out a triangular cloth by; in the middle of
which is formed a circular tunnel of the fame material. The
cloth has at each corner a leather flap, pierced with a num-
ber of holes, in order that an equal degree of fension may
conftantly be given, whether the ladder and its branches be
much extended or not.

In collecting the apples, the gatherer, afcending the lad-
der, throws the fruit as he strips it from the boughs of the
trees into the cloth, whence it rolls down the funnel part
into the bafket which is placed to receive it below.

So much injury and mischief are done to apple-trees at all
periods of their growth, by fetting ladders againft the boughs
of them, and the fruit is fo greatly bruifed and depreciated,
as well as subject to decay, by gathering it in the usual
modes, that both practices should be difcontined, and
better ones, fuch as the above, be had recourse to in fuch
cafes.

Triangular Battalion, in the Military Art. See Bat-
tery.

Triangular Canon. See Canon and Sine.

Triangular Compasses, are fuch as have three legs or
feet, by which to take off any triangle at once: thofe are
much ufed in the conftuction of maps, globes, &c. See
Compasses of three legs.

Triangular Fort. See Fort.

Triangular Leaf, in Botany. See Leaf.

Triangular Numbers, are a kind of polygonal num-
bers; being the fums of arithmetical progression, the dif-
fERENCE of whole terms is 1.

Thus, Of arithmetical progres. 1 2 3 4 5 6
are formed trian. numb. 1 3 6 10 15 21

For the rationale and management of these numbers, see
Malcolm's Arith. book v. ch. 2.

Triangular Quadrant, is a fecto furnished with a loftie
piece, by which to make it an equilateral triangle.

The calendar is graduated on it, with the fun's place,
decoration, and other ufeful lines; and by the help of a
string and a plummet, and the divisions graduated on the
lafie piece, it may be made to serve for a quadrant.

Triangular Winding-flairs. See Stair.

TRI-
TRIANGULARIS STERNI, in Anatomy, a muscle of the ribs. See Intercostales.

TRIANGULARIS GENUS, the depreessor anguli oris, a muscle of the mouth. See Deglutition.

TRIANGULARIS PISTIS, in Ichthyology, the name of a sea-fish of a very remarkable figure, called in English the coney-fish, of which there are two species, the one having two horns, the other wanting that character.

The horned kind usually fix or five fingers breadth long, and about three fingers broad; the tail ends in a long fin; the mouth is small, having twelve strong serrated teeth in the upper jaw, and eight larger ones in the lower; the head ribs gibbously from the mouth to the horns, and the back is humped in the middle; it has only one small fin near the tail; its eyes are large and placed near the horns; the fin near the tail, it has four others; the tail being one, and one more being situated on the back, and two on the belly; it has two horns like cocks' spurs, growing straight out of its forehead, and two others in a contrary direction, out of its belly near the tail; it has no scales, but has a hard skin, white on the belly, and brown every where else, and wonderfully marked with trigonal, tetragonal, pentagonal, and hexagonal figures.

The species which has no horns has a broader belly, a longer tail, and is marked all over its body only with hexagonal figures, and innumerable small tubercles: its belly is yellowish, and the rest of its body of a greyish or brownish yellow; the mouth is narrow, and the teeth small, five in the lower and eleven in the upper jaw; the eyes are large and round; it is hollow, and has very little flesh.

Both the species, which belong to the genus octracin in the Linnean system, are caught among the rocks, on the shores of the island of Java, and are sometimes eaten by the inhabitants, being first skinned. Cluf. Exot. lib. ii. cap. 27.

Willughby's Hist, Pisc. p. 150.


Gen. Ch. Cal. Perianth half-inferior, of five oblong leaves, internally coloured, pointed below the fummit, permanent. Cor. none, except the calyx, which partakes of the nature of both parts, be considered as such. Stam. Filaments about ten, (from five to twelve,) capillary, the length of the calyx; anthers roundish. Pist. Germen almost entirely superior, oblong, abrupt; styles one or two, thread-shaped, the length of the germenis, hispid on one side; stigma simple. Peric. Capsule oblong, abrupt, burstling all round, of two, tranversefely interrupted cells. Seeds one or two in each cavity, nearly ovate.

Obs. The number of flaments, as well as of styles, differs in different species.


1. T. monogyna. Purlane Triantema. Linn. Mant. 69. Willd. n. 1. Ait. n. 1. "Decand. Pl. Gracies t. 109." (T. Portulacenftrum; Linn. Sp. Pl. 325. Portulaca curassavica proemunens, caparidas folio, flore mucifo, capillus bifurcatus; Herm. Parad. 213. t. 213. Kali curassavicae proemunens, folis subfutundis; Pluk. Phyt. t. 95. f. 4.)—Stamens more than five. Style one. Leaves elliptic-oblong. Stem with a hairy line along the upper side.—Native of the Weft Indies and South America. Sometimes raised for curiosity's sake, in our floves, where it flowers in summer. The root is annual. Stems a foot long, much branched, leafy, spreading on the ground in every direction, smooth, except a dense, flender, hairy line along their upper side. Leaves opposite, unequal, flaked, oval or roundish, obtuse with a small point, entire, smooth, red at the edge, from one to two inches long. Stipulas membranous, acute, half the length of the footstalk, to which they are united. Flowers axillary, sessile, about three together, pale and membranous, with a pair of bracteas to each. Stamens from six to ten. German with two distant horns. Style, according to Linnaeus, solitary, rough at one side, with a simple stigma.

2. T. crysallina. Cryzalline Triantema. Sm. Spicil. t. 26, unpublished. Vahl. Symb. v. 1. 32. Willd. n. 2. (Papulia cryzzallina; Forf. Egypt.-Arab. 69. Gyropermum depresfum; Linn. MSS.)—Stamens five. Style one. Leaves elliptic- lanceolate. Stem papillary all over.—Native of the East Indies and of Arabia. We received it from Madras, by the favour of Dr. Roxburgh. Linnaeus cultivated it at Uphal, and has left in his herbarium specimens, with a coloured drawing, and a description. He made this plant a new genus by the name of Gyropermum, judging it a kin to Herniaria. It would have appeared in the third number of our Spicilegium, had that work been continued; but the page, though printed, was never published. The root is perennial. Stems herbaceous (not shrubby), depressed, a span long, reddish, branchid, leafy, clothed with pellucid papillary granulations, which in the dried specimen become bagny hairs. Leaves opposite, flaked, like Polygonum avoileure in size and figure, with united membranous flippulas, as in the foregoing. Flowers axillary, sessile, one, two or three together, small, whitish with a red german. Bracteas of two opposite scales under each flower. Stamens five, very short. Style one, with a divided stigma. Ripe capsule of one cell, embraced by the base of the calyx. Seeds two, one above the carker, black, orbicular, depressed, rough, with concentric furrows. This species surely approaches in many points to Sadiola, so far at least as to indicate a great affinity between the two genera.

3. T. pontandra. Smooth Triantema. Linn. Mant. 70. Willd. n. 3. (Rocca; Forf. Egypt.-Arab. 71. Portulaca allius polygmojides, flifo et fabe mediarafienfis; Pluk. Phyt. t. 120. f. 3.)—Stamens five. Styles two. Leaves obvolute. Stipulas pointifes. Stem nearly smooth.—Native of Arabia. Annual, cultivated by Linnaeus at Uphal, but unknown in our gardens. The size and habit of the plant answer to the first species, but the stem has no hairy line, nor more than a light papillary ringlets, on the young branches only. Leaves nearly uniform, obvate rather than elliptical, on long hairles, to which the membranous flippulas are entirely united, without any separate points. Flowers purplish. Styles recurved. Wildenow copies Reichard's error of Rocca, for Rocca.

4. T. fruticosfa. Shrubby Triantema. Vahl Symb. v. 1. 32. Willd. n. 4. (Gymnocarpus decandrum; Forf. Egypt.-Arab. 65. 1c. t. 10. Desf. Atlant. v. 1. 203.)—Stamens ten; five alternate ones imperfect. Style one. Leaves cylindrical, pointed. Stem shrubby, round, smooth.—Native of the sandy deserts of Cago, as well as about Tunis. A rigid spreading shrub, about a foot high; its bark grey and weather-beaten. Leaves flally, glaucescent, smooth, oblongely triangular, about half an inch long, in little tufts. Flowers three to five, in tufts at the ends of the branches, sessile, violet-coloured, a third of an inch broad,
broad, hairy at their base and at their points. *Seed solitary, according to procennial Desfontaines, to whom we are obliged for a specimen. Vahl *fusicae there may be two *fedae.

5. *T. humifusa. Prostrate Cape Trianthema. Thumb. Prodr. 80. Willd. n. 5.—"Style one. Leaves lanceolate. Stem shrubby, round."—Gathered by Thunberg at the Cape of Good Hope, as well as the next. We have seen no specimen of either.


7. *T. decandra. Trailing Indian Trianthema. Linn. Mant. 70. Willd. n. 7. Att. n. 2. (Zaleya decendra; Burm. Ind. 119. t. 31. f. 3.)—Stamens about ten. Styles two. Leaves obovate. Stipules pointeles. Stem nearly smooth.—Native of the East Indies. The herbage of this species bears a great affinity to *T. pentandra, but the flowers are rather shorter. Their flowers indeed are very different, those of the present being much larger, on longish stalks, with a fleshy, scarcely membranous, calyx.

TRIATHASIA, in *Ancient Geography, a town of Asia, in the Lesser Armenia, upon the route from Sebaste to Corduban, between Tonoa and Codrizabala. Anton. Itin.

TRIARIUM, in the Roman *Militia, a kind of infantry, armed with a pike, shield, a helmet, and a cuirass: they were thus called, because they made the third line of battle.

The triarii were also called *poggigno, because ranged behind the princes who bore the standard in a legion.

Polybius distinguishes four kinds of forces in the Roman army: the first, called *pilatus, or velites, he says, were a raw body, lightly armed. The *hatari, or *fiar-men, were a degree older, and more experienced. The third, called *principes, princes, were full older, and better soldiers than the second. The fourth were the oldest, the most experienced, and the bravest; these were always disposted in the third line, as a corps de reserve, to sustain the other two, and to restore the battle, when the others were broken or defeated. See *Legion.

Hence their name of triaarii: and hence the proverb, *Ad triarios ventum est, to shew that one is at the last and hardest struggle.

TRIAGES Harmonica, Lat.; *Triade Harmonique, Fr.; *Harmonical Triad, Eng.; in *Music. This term has two different senses. In *calculation, it is the harmonical proportion; in *practice, it is the perfect major chord resulting from the same proportion, and which is composed of the fundamental sound, its major or sharp third, and its fifth. It is called a *triad, because composed of three sounds; and *harmonic, because in harmonic proportion; and is the feme of all harmony.

TRIATHERA, in *Botany, from *τρια, three, and *αθήν, an awn. Palisot de Beauvois *Agrostogr. 39. t. 9. f. 4.—


1. *T. juncea of Defrance is given as the only species, without account of its native country. By the figure it appears to be a slender grass, with linear leaves, and a simple, upright, unilateral *glumier, rather above an inch long; the flowers not a quarter of an inch in length. Nothing is known of the *flamen, *pilos, or *seed. The *awn, confining of three rough equal bristles, more than twice the length of the *floret, and united by a short fimple base, is considered by the above author as the rudiment of an abortive floret, which idea is adopted in a familiar cafe by Kuntb. (See *Trileana.) We do not doubt that such an *awn may take place of a *floret, by one of those metamorphoses so common in grasses, whose awns are known to be among the least permanent of their distinctions; but it is offering too great violence to language to use one term for the other.

TRIACOURT, in *Geography, a town of France, in the department of the Meuse; 7 miles S. of Clermont en Argonne.

TRIAZEV, a town of Russia, in the government of Upha; 88 miles N. N. W. of Upha.

TRIACHIUCHA, a town of Russia, in the government of Upha, on the Ural; 140 miles E. of Orenburg.

TRIBALE, LA, a town of France, in the department of the Tarus; 6 miles W. N. W. of La Caune.

TRIBALLI, in *Ancient Geography, a people of Lower *Mafia, upon the banks of the Danube, called also *Servians.

TRIBAU, of *Trebohe, in *Geography, a town of Moravia, in the circle of Olmutz; 28 miles N. W. of Olmutz. N. lat. 49° 43'. E. long. 16° 29'.

TRIBE, *Tribus, in *Antiquity, a certain quantity or number of persons; which a division is made of a city or people into quarters or districts.

The city of Athens was divided into ten *tribes: the Jewish nation into twelve; or, if we separate the family of Joseph, thirteen tribes, the descendants of the twelve sons of Jacob, viz. the tribes of Judah, of Reuben, Gad, Asher, Dan, Nephthali, Ephraim, Manes, Simeon, Levi, Zebulon, and Benjamin; the polish of Joseph being divided into two tribes, that of Manes, and that of Ephraim.

There were ten of these tribes that revolted, and followed Jeroboam. The other two, viz. those of Judah and Benjamin, adhered to the house of David, and to the worship of the true God, whilst the other tribes declared for idolatry. This schism, which lasted above 200 years, ended at last in the captivity of the ten tribes, which were carried away by Shalmanefer into Assyria and Media: nor does it appear from history, that they ever returned into their own country, at least all of them, though we find it attested by some modern Jews and ancient fathers of the church.

Mention indeed is often made in the New Testament of the twelve tribes (see Matt. xix. 28. Luke, xxii. 30. Acts, xxvi. 7. James, i. 1.); and St. James directs his epistle to them; but from these passages we cannot conclude, that they were then gathered together; but we may infer, that they were still in being. Perhaps the whole body of the Jewish nation retained the name of the twelve tribes, according to the ancient division, as we find the disciples called the Twelve, after the death of Judas, and before the election of St. Matthias. (John, xx. 24.) Moreover, there were Jews in a sufficient number of the ten tribes mixed with that of Judah, or dispersed into several parts of the world, to afford occasion for speaking of the twelve tribes, as making but one body with the Jewish nation. Of their dispersion into various parts of the East, we have accounts that cannot be questioned. Whether or not we admit Sir W. Jones's opinion, that the *Afghans (which see) were defended from them, Dr. Buchanan has recently confirmed the opinion, that the polish of the Jews still remain in India. A heathen author, quoted by Jofephus, (Antiq. i. ix. and i. xi.) affirms, that the Persians had carried several thousands of Jews into Babylon, from whence it is natural to conclude, that a considerable number returned home with the others, when they were set at liberty by Cyrus. See 2 Chron. xxxiv. 9. 1 Chron. ix. 3. Jer. l. 4. Luke, ii. 36.

The tribe of Judah did not continue more faithful to God...
God than Samaria, the metropolis of the kingdom of Israel, had done. On this account they were often delivered into the hands of their enemies, and at last all carried away captive by Nebuchadnezzar in the 19th year of his reign. See Captivity and Jews.

The Roman people were at first only divided into three tribes; and from this number three, tres, it was that the word tribe, tribus, took its rife. Livy says (l. vi. c. 5.) that the appellation was derived a tributa. This division was accommodated by Romulus to the several nations he had united; the first consisting of the Albans, the second of the Sabines, and the third of a mixture of fugitives, who came to seek an asylum at Rome.

Servius Tullius, fearing this partition might occasion feditious, divided the inhabitants of Rome by cantons, not by nations: accordingly, he distributed the city into four quarters, or tribes; and by reason a great number of citizens had retired into the country about, of those he composed twenty-fix other tribes; so that from this time the Roman people consisted of thirty tribes.

Writers are not agreed concerning the precise number. With the four city tribes, and the seventeen rustic tribes of Servius, as some have arranged and denominated them, the Roman people made up the number of thirty-five tribes. However this be, in after-times the number of tribes amounted to thirty-five; but they then ceased to be ranged according to the quarters of the city. The distribution depended on the cenfors, who formed their lift at discretion, frequently confounding the country tribes with those of the city.

A man was never absolutely a Roman citizen, unless he had the jus tribus, i. e. till he were intituled to the honours of the magistrature, as also a right of voting in assemblies of the people; and this is what they called jus quiritium. Hence the inhabitants of the municipal cities were only imperfect citizens, as being of no tribe.

The freed-men were obliged to purchase this right of tribe, which did not other-wise belong to them, though they were citizens of Rome.


Tribes of Plants, in Gardenig, the particular kinds or forts of cultivated garden vegetables of these descriptions, which are arranged and brought together under peculiar heads or names, according to their similar refemblances or appearances; the sameness of their habits of growth; and the general affinities which they bear, in some way or other, to each other. By these means, and in these several ways, a great number of different tribes of these forts of plants are formed and constituted. Thus the time or duration of the growth of some afford several of these classes or tribes, such as the following: viz. the

Annual Tribe: that which contains all forts of annual

plants, or those only of one year's growth or duration, being often simply, on that account, termed annuals.

Biennial Tribe: that which includes all kinds of plants, which are of two years' duration or length of growth, and which are sometimes called simply biennials.

Perennial Tribe: that which comprehends all forts of plants which are of perennial or many years' growth or duration, and which is applicable to trees as well as herbs, though somewhat more frequently and generally used to herbaceous perennial plants. These are occasionally called perennials merely. See Annual, Biennial, and Perennial Plants.

The nature and form of the root have also some influence in the formation of these tribes, as is evident in the following:

Bulbous-rooted Tribe: that which comprises all kinds of plants which have thick or bulbous roots; such as those of the onion, turnip, lily, crocus, narcissus, and several other kinds.

Tuberous-rooted Tribe: that which contains all forts of plants which have thick, knobby, fibrous roots, such as those of the anemone, potato, Jerusalem artichoke, and many other kinds.

Fibrous-rooted Tribe: that which comprehends all forts of plants which have small firing-like fibrous roots, such as that of endive, and many other kinds. See Root.

The ligneous or woody nature of plants likewise causes distinctions of this description, such as these:

Ligneous or Woody Tribe: that which includes all forts of the tree or shrub kind which have woody or solid durable stalks or limbs, such as those of the oak, ash, beech, and other similar kinds, as well as such shrubs as the holly, alderas, althea, and many other forts. See Tree and Shrub.

Arborescent Tribe: that which contains all forts of plants of the tree kind, which rife with an upright main stem or stalk to a considerable height, as in the ash, beech, &c. See Tree.

Fruiting or Shrubby Tribe: that which takes in all forts of plants of the shrubby kind, or which have any thing of shrub-like growth, and which rise only to a moderate height, having a divided, low, stumpy, and branching bushy appearance about the bottom and other parts, as in the althea frutis, fyringa, &c. See Shrub.

The habits of different forts of plants, in regard to the lofs or the retention of their leaves during particular season of the year, are a further source of the distinction of them in these modes.

Deciduous Tribe: that which comprises all forts of both trees, shrubs, and plants, which call their leaves during the winter season, or before it commences; such as the ash-tree, the fyringa shrub, and the fern, golden-rod, and mith plants.

Sempervirens or Evergreen Tribe: that which comprehends all the various sorts of trees and shrubs, as well as other kinds of plants, which have the property of retaining their green leaves the whole of the year round, such as the holly, yew, box, laurel, and many others. See Deciduous and Evergreen Trees.

Herbaceous Tribe: that which contains all the different sorts of the herbaceous or herb kind of plants, which most commonly rife furnished with leaves immediately from the roots, and with soft herbaceous leaves or stalks, without any sort of woodiness; but which, for the most part, decay and die about the clofe of the fame year in which they were produced, such as the pea, bean, lettuce, mustard, cress, and numerous others. See Herbaceous Plants.
There are others which are arranged in this manner from their juicy or succulent properties, as the following tribes.

**Succulent Tribe**: this is that which includes all the forts of plants which have fleshy, moist, juicy leaves, which are sometimes of considerable thickness, but in other cases not, such as the sedum or house-leek, the aloe, the agave, and several others. See Succulent Plants.

The manner of feeding, and the economical uses to which plants are put, are further causes of their arrangement and distinction in this way.

**Leguminous Tribe**: that in which all the different plants that it embraces have the fort of seed-vessel which is usually denominated a legume, or pod, as in all the pea, bean, kidney-bean, and other paphianaceous-flowered plants.

**Oleraceous Tribe**: that in which the various plants that it contains are of the eficulent or eatable kind for the table, or for being preferred and made use of for other culinary or domestic intentions. See Leguminous and Esculent Plants.

The forms of the leaves and plants, the manner of their flowering, the shapes of their flowers, the methods of feeding or fruiting, and the particular nature, qualities, and properties of plants, all have a further tendency to the introduction of more tribes of these kinds.

**Pinated Tribe**: that in which all the forts of the trees and plants which it contains have pinnate leaves, or those which are in the shape of wings, as is the case in a great number of different kinds, as in the acacia, the fumach, and many others.

**Enfataceous or Sword-leaved Tribe**: that which comprises plants that have sword-shaped leaves, as is the case in many forts, such as the iris or flowering rush, the gladiolus or sword-lily, &c.

**Spathaceous Tribe**: that which contains all such plants as protrude and produce their flowers out of a spatha or sheath, and which are many in number, such as the narcissus, or daffodil and jonquil, the galanthus or snow-drop, and the amaryllis or lily-daffodil, Guernsey lily and the belladonna and jacobaea lily.

**Liliaceous Tribe**: that which comprehends all the forts of plants which have papilionaceous or butterfly-shaped flowers, such as those of the pea, bean, and all the leguminous kinds of plants. See Papilionaceous Flowers.

**Campanaceous Tribe**: that which contains all the various kinds of plants which have campanulated or bell-shaped flowers, as those for instance, of the campanula or bellflower, the convulvulus or bind-weed, and bean-kind, and others of the same fort.

**Rosaceous Tribe**: that which includes all forts of plants which have rotated or wheel-shaped flowers, such as those of the lythrum or loose-flire, the anagallis or pippermel, and some others.

**Umbelliferous Tribe**: that which contains all such plants as produce their flowers in somewhat the form of an umbrella, as in those of the angelica, the anethium or fennel, the paphian or parnep, and some others. See Umbellated Plants.

**Verticillose Tribe**: that which comprises those forts of plants which have their flowers produced in something of the form of a verticillus or whorl, as in those of the thymus or common thyme, the hyssopus or hyloph, the melifera or balm, the origanum or marjoram, the mentha or mint, and several others. See Verteillated Plants.

**Aggregate Tribe**: that which comprehends such plants as produce their flowers in an aggregate form, consisting of numerous florets or small flowers, each having its own proper calyx or cup, but the whole of which are collected into one cluse aggregate, or head, as in those of the fieberia or fieberia, the latese, thrift, or sea-pink, the globularia or globular blue daisy, and some others. See Aggregate, in Botany.

**Composite or Compound Tribe**: that which comprises those forts of plants which have compound flowers, consisting of a great number of florets contained in one common calyx, or cup, as in those of the fun-flowner, the marigold, the alder or tar-wort, and many others. See Compound in Botany.

**Amentaceous Tribe**: that which contains those plants which produce their flowers in amaments or catkins, as in those of the populus or poplar-tree, the corylinus or hazel, the fagus or beech, the betula or birch, and some others. See Amentaceous.

**Baccaceous Tribe**: that which comprehends all those forts of plants which bear and produce any kind of berry, as the ribes or gooseberry and currant, the rapsbury, the, yew, and many others.

**Coniferous Tribe**: that which contains all such forts of trees and plants as bear that kind of fruit or seed which is denominated a cone, as the various forts of firs, &c. See Cone, in Botany.

**Fungous Tribe**: that which takes in all vegetables of the mushroom and other similar kinds, as the common mushroom or agaricus, &c.

**Gramaous Tribe**: that which comprehends all such forts of plants as are of the grass or grain kinds, such as the different field grassless, and those of the wheat, rye, barley, oat, and other similar kinds.

**Lurid Tribe**: that which includes all the sorts of plants which have any thing of an ominous appearance or hurtful or noxious quality about them, as those of the atropaga or deadly nightshade, the datura, thorn-apple or frrammonium, the nicotiana or tobacco-plant, the folium or love-apple, &c. the capuchin or guinea-pepper, the digitals or fox-glove, and several others.

**Nuciferous Tribe**: that which comprehends all the forts of the nut-bearing kinds of plants, as the hazel-nut-tree, the walnut-tree, &c.

**Pomaceous Tribe**: that which comprehends all such forts of plants as bear or produce a fruit of the apple kind, as that of the pyrus malus or apple kind, the pyrus communis or pear kind, the pyrus cydonia or quince kind, the amygdalus or almond kind, the prunus or plum kind, the melipus or medlar kind, the pyricula or pomegranate kind, and some others.

This sort of classification or arrangement of the different plants which are cultivated in the garden or pleasure-ground for the sake of their culinary uses, or the ornament which is afforded by their flowers, is often of very great utility and convenience, as supplying the means of throwing together those forts of plants which have many circumstances and practices in their general culture and growth which have much similarity to each other, by which the common gardener has a far greater facility of raising and managing them, as well as of securing their produce in fruit or other ways. He is thereby also better enabled to make use of these of the ornamental kinds in the borders, clumps, and other parts of the grounds in which they are to be set out and placed.

**TRIBENSEE**, in Geography, a town of Austria; 3 miles N. of Tulln.

**TRIBERG**, a town of the Briegau; 15 miles N.E. of Friburg. N. lat. 48° 9'. E. long. 8° 17'.

**TRIBERL**.
TRIBERL, Bohmisch, a town of Bohemia, in the circle of Chrudim; 4 miles E.N.E. of Leutminislh.

TRIBISA, a river of Saxony, which runs into the Elbe, near Meißen.

TRIBOCOI, Triboci, or Tribecos, in Ancient Geography, a people of Germany, on this side of the Rhine, situated, according to Strabo and Caesar, between the Mediomatrici and the Treveri. Caesar says they formed part of the army of Arriovisius. Their capital was Argentoratum or Strafburg.

TRIBOLI, in Geography, a town of Asiatic Turkey, in the government of Trebizon; 4 miles W.S.W. of Trebizon.

TRIBOMETER, formed of $\tau$, rub, and $\mu$, I measure, in Mechanics, a term applied by Murchenbroek to an instrument invented by him for estimating the friction of metals. It consists of an axis formed of hard steel, passing through a cylindrical piece of wood; the ends of the axis, which are highly polished, are made to rest on the polished semicircular cheeks of various metals, and the degree of friction is estimated by the weight of a weight thatboted by a fine silken string or ribband over the wooden cylinder. For a farther description and figure of this instrument, and the result of various experiments performed with it, see Murchenb. Int. ad Phil. Nat. vol. i. p. 151, &c.

TRIBONIANUS, or TRIBONIAN, in Biography, an eminent jurist, was a native of Side, in Pamphylia, and richly furnished with Greek and Roman literature, so that he composed works on a great variety of subjects. But as he principally devoted himself to the study of civil law, he excelled in this department, and rose to one of the highest posts in the empire. In the office of queller, to which he was advanced, his avarice led to such a degree of oppression, that in the federation of Confantinopole, A.D. 532, his removal was one of the demands of the people. His influence, however, was such, that he was soon restored, and he continued, on account of his talents and by means of his sordid adulation, to enjoy the favour and confidence of his sovereign for twenty years. He was elevated to the dignities of confidant and master of the offices, and was confounded on all important occasions. Of his concern in compiling the code of civil law, we have elsewhere given an account. (See Code and Civil Law.) He has been charged with enmity to the Christian faith, and he has been under the inconcerted imputations of Attilius and Paganinis. Whether charges of this kind be true or false, he was notorious for his avarice and want of integrity; and from the contrivance presented by his heart and his understanding, Gibbon has drawn a parallel between him and our great Bacon. His death is placed about the year 546. Anc. Un. Hist. Gibbon's Rom. Emp.

TRIBACHYS, formed from $\tau$, three, and $\sigma$, short, in the Ancient Prophesy, a foot of verse, consisting of three syllables, and those all short; as, $\mu$.$\mu$. Of the moderns, was so called from the likeness of its fruit to the instrument of war denominated in English a caltrop. (See TRAPA.) Whether the name arose from $\tau$, to tear, or injure; or as some think from $\tau$, three, and $\delta$, a tooth, or a wound, may admit of controversy. The caltrop has four, not exactly three, points; and the seed-veil of our plant has a much greater number, though the appearance of the whole very much resembles the above war-like, or rather treacherous, instrument.—Linn. Gen. 213. Seleng. 289. Willd. Sp. Pl. v. 2. 566. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 3. 41. Sm. Prodr. Pl. Grac. Sibth. v. 1. 273. Juss. 296. Tourn. t. 141. Lamarr. Ill. t. 346. Gartn. t. 69. — Chafes and order, Decandria Monogynia. Nat. Ord. Grumiales. Linn. Rutaceae. Juss. but not correctly.

Obi. T. maximus, Limnaeus by mistake says cissifera, has ten rugose capsules, almost definite of lateral spines.

Eff. Ch. Calyx in five deep segments, rather shorter than the petals. Cor. Petals five, oblong, obtuse, spreading. Stam. Filaments ten, small, awl-shaped; anthers incumbent, simple. Pist. German roundish, bristly, the length of the flamen; style short and thick; stigma capitulate, with five rays. Peric. roundish, thorny, of either five or ten capsules, which are gibbous externally, and armed with three or four thorn thorns; angular on the inner edge and crowded together; their cells several, transverse. Seeds solitary in each cell, oblong.

Obi. T. maximus. Great Caltrops. Linn. Sp. Pl. 553. Willd. n. 1. Ait. n. 1. Jacq. Coll. v. 4. 110. G. Rar. t. 462. (T. n. 2.; Browne Jam. 220. t. 21. f. 3.) T. terrefiris major, flore magnome odorato; Sloane Jam. v. 1. 209. t. 132. f. 1.; the figure at leaf, and part of the description. T. terrefiris, fructo turbinato, foliis lanugino; Plum. Ic. 252. t. 254. f. 1.) — Leaflets about four pair; the outer ones largest. Fruit turbinate, wrinkled, slightly spinous, with ten furrows. Style permanent. — Native of dry waife places, or rocky gravelly ground, in most parts of Jamaica. Sloane. The root is annual, rather deep. Stems several, about two feet long, spreading flat on the ground, branched, round, leafy, flat, rather hairy. Leaves opposite, abruptly pinate, lobed hairy, an inch and a half long, of fix pair of half-ovate, entire, acute leaflets; the first pair smallst, the third largest; on a flat stalk. Stipulas awl-shaped, pale, hairy. Flowers axillary, solitary, inodorous, on simple flakks shorter than the leaves, hairy, and fiddling upward; Calyx permanent. Petals obovate, half an inch long, dirty white, ribbed with dull purple. German roundish, hairy, crowned with a conical permanent style, exceeding its own length; stigma obtuse, marked with five rays. Fruit hairy, composed of ten corrugated tumid capsulces, knobbed rather than spinous, and beaked with the thick style. Limneus certainly alludes to this species, in the observation under his characters of the genus, and not to T. cissifera, which has the proper thorny fruit of the reef. It seems to us, that Sloane's definition and description of the flower belong, on the other hand, to cissifera, and that hence Limneus, nevertheless, took his specific name of maximus, which is nowtife suitable to the plant before us.


D 2
Fruit with ten horizontal awl-shaped thorns. Style deciduous.—Native of Ceylon. The **flem** seem woody, and probably perennial. Whole plant, excepting that circumstance, much like **T. terriferis** hereafter described, but the **leaves** are more hairy, or silky. Each of the five combined wrinkled **capsules** is armed with a pair of sharp, tapering, prominent thorns, twice the length of the capsule; but the base is nearly, or quite, defirute of spines. The flowers seem to be yellow, the fize of the leaf, with a short, thick, deciduous **style**.


Leaflets six pair, rather hairy, nearly equal. Fruit with ten horizontal awl-shaped thorns, and as many defiruted smaller ones. Style deciduous.—Native of the south of Europe, by way fides, as well as in cultivated ground. Dr. Sibthorp observed this species every where in Greece, retaining its ancient name a little altered, *gĕfis*. This is doubtlefs the *παδος χίομα*, or Land Caltrop, of Dioforides. The Turks call it *Demio Dikici*. We have an East Indian fpecimen from the late Dr. Roxburgh. The annual **root** produces many long, reddifh, hairy, leafe, slightly branched, prostrate *flem*. Leaflets smaller, and more numerous, than in our first species; leafs hairy than in the second; all nearly of equal fize, the outer, or terminal, ones being, if any thing, rather the smallest. **Flowers** yellow, on thortifh, fimple, folitary, axillary ifachts. Style thick, hardly fo long as the germin, deciduous. **Stigma** of five prominent rays. **Capsules** tuberculated, each with four awl-shaped thorns, of which the larger are scarcely half fo big as those of *T. lanuginosus*. Thoie at the base are ftrill smaller, pointing directly downwards, and ferve chiefly to diftinguish the furent preffes from the lat. The herb has been reputed cooling and emollient, ever fince the time of Dioforides. He fays the Thracians, who inhabited the banks of the Strymon, fed their hornes with the green plant, and made bread for themselves of its feeds.

4. **T. ciliaefis**. Cifus-flowered Caltrops. Linn. Sp. Pl. 554. Willd. n. 4. Ait. n. 3. Jacq. Hort. Schoenbr. v. 1. 54. t. 103. (T. terriferis major coraffavicis; Herm. Parad. 236. t. 236. T. terriferis americana, argemones flore flavo; Pluck. Phyt. t. 67. f. 4.)—Leaflets about eight pair, silky beneath, nearly equal. Petals twice as long as the calyx.—Native of meadows in the West Indies. A fwayne-plant with us, flowering in June and July, but not in general culture. The **root** is perennial, thick and woody, though Hermann fays annual. **Stems** many, herbaceoufe, difulfce, clothed with handfome leaves, whose upper leaflets are fmalleft. **Flowers** yellow, large and handfome, two inches wide, their ifachts longer than the corresfponding leaves. **Capsules**, according to Jacquin, each armed with four thorns of nearly equal fize.

**TRIBULUS Marinus**, the caltrop-shell, in Natural History, the name of a pecufiar species of the purpura. It is of a whitifh colour, and has three rows of thorns.

**TRIBUNAL, Judgment-Seat**, the seat of a judge.

The **tribunal**, in a court of justice, is properly the seat or bench on which the judge, and his associates, are placed, for the administration of justice, &c.

The word is Latin, and takes its origin from a seat raised from the ground, on which the tribunal of the Roman people was placed to administer justice.

**TRIBUNAL, among the Ancients**, was also a place from whence the people were harangued.

Among the Romans, it was an eminence in a temple, or a forum, as that called *pro rei publica*, where the people were harangued in tribes.

The French architects likewise use the word tribunal for a gallery or eminence in a church, or any other place, in which the muif is placed for a symphony or concert. Tribunal, or tribunal, is also used for a room or hall in which justice is administered; fuch, e.g. as the courts at Weftminster.

**TRIBUNE of the People, Tribune Plebis, in Antiquity**, a Roman magistrate, chosen out of the commons, to protect them against the oppressions of the great, and to defend the liberty of the people against the attempts of the senate and confuls.

The tribunes of the people were firft eftabfihed in the year of Rome 260. The firft defign of the creation was to shelter the people from the cruelties of fufurers, and to engage them to quit the Aventine mount, whither they had retired in difpleafure.

Their number, at firft, was but two; and the next year, under the confulate of A. Polibinus Arunacus and Caffius Viccellinus, there were three more added; and this number of five was afterwards increafed by L. Trebonius to ten.

The appellation tribunal was given them, because they were at firft chosen out of the tribunes of the army. See the article following.

The tribunes were, as it were, the heads and guardians of the people. They called afsemblies of the people when they pleased; and in thofe afsemblies they frequently annulled the decrees of the senate. Nothing could be concluded without their confent, which they expressed by fubfcribing the letter T at the bottom of the decree. They had it alfo in their power to prevent the execution of any decree, without giving any reafon for it, and merely by fubfcribing *Veto*. This interpofition was called *interr附属*.

They fometimes even called the confuls and ditector to account for their conduct before the people. The tribunes of the people, by virtue of their office, claimed and exercifed a power of sumoning the fenate at any time, whenever the affairs of the people required it, though the confuls themselves were in the city. It has been taken for granted, on the authority of Valeriu Maximus, that the tribunes of the people, on their firft creation, were not admitted into the fenate, but had feats placed for them before the door in the vestibule. But we may reafonably conclude, that a magiftrate fo ambitious and powerful, who could controul, by his fingle negative, whatever paffed within doors, would not long be content to fit without. Dionyf. Halic. x. 31. Middlet. of Rom. Senat. p. 129. Val. Max., lib. ii. cap. 27.

A. Gellius fays that they were not made fenators before the law of Atinus, who is suppofed to be C. Atinus Labeo, tribune of the people, A.U. 623; but that cannot possibly be true, fince it is evident from the authority of Dionyfius, that near four centuries before, the tribunes, by the mere weight and great power of their office, had gained an actual admiffion into the fenate, within two years after their firft creation; in which we find them debating and enforcing, with great warmth, the demands of the commons, for a liberty of internarriages with the nobles, and the choice of a plebeian conful. So that the intent of this Atinus law could not be, as it is commonly underftood, that the tribunes fhouid be fenators in virtue of their office, for that they had been from the beginning; but that for the future they should always be chosen out of the body of the fenate, or, which is the fame thing, out of thofe who had already borne the office of quafltor. A. Gell. xiv. S. Vide Pighil.
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Syllus, the dictator, was the first who presumed to put a stop to the encroachments of the tribunes, A.U. 672; but under Cotta, the conful, they recovered part of their power, A.U. 679; and in 683, Pompey the Great re-established them in the possession of their ancient privileges. Their power subsisted till the time of Julius Cæsar. And in the year of Rome 731, the senate by a decree transferred the whole authority of tribunes of the people to Augustus and his successors, so that they had little more than the name and form of magistrates; whence the emperors were laid to be tribunition potestate donati. Accordingly, Augustus himself was tribune for thirty-seven years; Tiberius assumed the fame quality; as likewise did his successor; signifying the year of their tribunate on their medals and coins; but their design in it was only to poffefs themselves of all the authority, that there might be nobody to oppose them.

In the time of the emperors Nerva and Trajan, the dignity of tribune of the people was a mere title, without office and honour; and thus it continued till the reign of Constantine the Great, after which there occurs no mention of this magistrate.

TRIBUNES of the Soldiers, Tribunus Militum, or Militaris, an officer in the Roman army, who commanded in chief over a body of forces, particularly a division of a legion; and was much the fame with our colonel, or the French mestre de camp.

There is a distinction of the tribunes into latidivisi and angulatdivisi, those born of noble families were allowed, after they were made tribunes of a legion, to take the latidivus. The rest were only to wear the angulatdivus; whence Suetonius takes care to inform us, that his father was tribunus latidivus of the thirteenth legion. Over these tribunes of legions and cohorts, there were other tribunes who commanded in the absence of the consuls, and who were invested with a confular authority. Budeus have thefe to be much the fame as the marshals of France, or, at least, as our lieutenants-general.

Romulus likewise established a tribune of the cavalry, tribunus equitum, who was the fame with the magister equitum under the dictators, and the chief officer after the kings.

The tribunes of the soldiery were of an elder standing than those of the people; those latter being elected out of the former. Varro will have it they were called tribunes, because, at first, they were only three in number in each legion, when the legion consisted of three thousand men, taken out of the three tribes then on foot. In proportion as the legion was increased, the number of tribunes was likewise increased to the number of six.

At first, the nomination lay in the general of the army; but in the year of Rome 391, it was appointed, that the people should nominate one part, and the general another; the latter were called Rufus, from Rutilius Rufus, who paffed that law.

Those chosen by the people in the comitia, were called comitati; they were indifferently either patricians or plebeians; and they had the fame marks of honour as the consuls themselves. The tribune of the pretorian cohorts was the captain of the guards.

TRIBUNE was also an appellation given to various other officers; as the tribunus aræs, tribune of the treasury, Tribunus aræs, or Roman light-horse, the officer who commanded them. Tribunus fabricarum, those who had the direction of the making of arms. Tribuni marinorum, tribuni navicorum, and tribuni vulgatissimum, mentioned in the Theodosian Code, as intendants of the public shows, and other diversions.

The title of tribune, tribunus, was also given to the chief of each tribe.

TRIBUNITIAN, Tribunitius, a term among antiquaries and medallists. The tribunitian power was the dignity, office, or authority of a tribune of the people.

This power was assumed by the emperors, and makes one of the chief titles they bear on their medals: the quality was first introduced by Augustus, to keep the sovereign authority over the other magistrates without either taking that of dictator or king. Indeed, it was offered to Julius Cæsar, but he despised it. Augustus is the first who used it, and his successors followed his example. They reckoned the years of their empire on their medals by thofe of their tribunitian power.

This power was sometimes given them for a certain number of years, and sometimes for ever. Sometimes the emperors would communicate the power to such as they associated, or as they intended to succeed them: and Tiberius held it fifteen years with Augustus. But this practice only obtained till the time of Valerian and Gallienus. After them we only find TR. P. II. in Claudius; TR. P. I. in Aurelian; and TR. P. in Probus. This, however, is only to be understood of medals; for in inscriptions we find it after that time.

Cardinal Noris and F. Pagi have disputed about this tribunitian power, in which it confided. The first maintains, that it did not at all differ from that of the ordinary tribunes, which confided in three things: 1. In the right of opposing all the acts and resolutions of the other magistrates. 2. In that it rendered their persons sacred and inviolable. 3. In a power of making edicts and laws.

F. Paggi affirms, that it made an addition to the power of the tribunes; that the privilege it conferred of making edicts, was more ample than that of the ordinary tribunes; besides, that it carried with it a power of convening the senate at pleasure.

M. Spanheim is of F. Pagi's opinion; he believes that the tribunitian power had much the advantage of the tribunes: 1. In that it was peculiar to the patricians, and did not reduce the person who held it to the degree of a plebeian. 2. In that it was not confined to the city of Rome alone, like the other; but that it extended throughout the empire, as well as the proconsular power, which was usually annexed to it. 3. That the dignity of the tribunes was inferior to that of the pretors; whereas the tribunitian power of the Caesars conferred, according to Tacitus, a sovereign authority over all magistrates, and rendered such as it was communicated to, equal to the emperors, and even made them their colleagues in the empire; besides the power of oppressing the enterprizes of all the other magistrates; and that it rendered their persons sacred, and gave them a right to assemble and dismiss the senate; which were privileges the tribunitian power had in common with the tribunes.

F. Hardouin thinks we should distinguish two tribunitian powers; the one civil, the other military; but the proof he brings of them is very weak. M. Spanheim says, his distinction is only founded on vain conjectures, none of which deserve notice.

The learned are greatly divided as to the month and day on which the tribunitian power commenced: Sigonius and Petavius will have it begin on the 1st of January; others, as Perizonius, on the fifth of the calends of July: M. Theinard, on the fourth of the ides of December: Ouerhuis, cardinal Noris, F. Pagi, &c. on the day of the emperor's accession.
acception to the empire; with this difference, that F. Pagi takes it to be on the fifth of the calends of the month in which the emperor was proclaimed; and that this day was, for this reason, held sacred among the Romans.

F. Harodine thinks, that on medals the tribunitian power commences on the anniversary of the building of Rome, viz. the eleventh of the calends of May, excepting on the Greek medals, where it begins in September, in regard this month, which began the Greek year, was near the time when the tribunitian power was first conferred.

Of all these sentiments, the most probable is that of Omphrius, &c. setting aside the restriction of F. Pagi. See M. Spanheim, Dissert. xii. tom. ii. p. 429.

TRIBUTA COMITIA. See COMITIA.

TRIBUTARY, TRIBTARIUS, one who pays tribute to another, in order to live in peace with him, or to share in his protection.

The republic of Ragusa is tributary to the grand Turk; so also is the chieft of Little Tartary, &c.

TRIBUTE, TRIBUTUM, a tax, or impost, which one prince or state is obliged to pay to another, as a token of dependence; or in virtue of a treaty, and as a purchase of peace.

The Romans made all the nations they subdued pay them tribute. Mahomet laid it down as a fundamental of his law, that all the world should pay him tribute.

In the states of the grand signor, Christian children are taken, by way of tribute, to make agemoglans, janizaries, &c.

Tribute is sometimes also used for a personal contribution, which princes levy on their subjects by way of capita tion, or poll-money.

In this it differs from an impost, which is properly what is laid on merchandise.

TRICADIBA, in Ancient Geography, an isle of India, upon the coast, on this side of the Ganges, in paling from the gulf of Caintecilo to the Colchic gulf, and to the S. of the isle of Heptanisia.

Trolemy.

TRICAE, in Botany, so called from ΢.Ε., ζα, a hair, because they seem composed of a horse-hair rolled, or partly folded, into a little round black head, are the peculiar fructification of the genus of Lichens named GYROPHORA. See that article; as well as Lichenina, their eighth kind of receptacle.

TRICALA, in Geography, a town of European Turkey, in Macedonia, on the Strimon; 50 miles E.N.E. of Saloniki.—Alfo, a town of European Turkey, in Thespho; 21 miles S.W. of Larissa.

TRICALORE, a town of Hindostan, in the Carnatic; 38 miles W. of Pondicherry. N. lat. 11° 58'. E. long. 79° 21'.—Alfo, a town of Hindostan, in the Carnatic; 17 miles S. of Tanjore.

TRICARICO, a town of Naples, in Basilicata, the see of a bishop, suffragan of Acerenza; 13 miles S.E. of Acerenza. N. lat. 40° 43'. E. long. 16° 8'.

TRICARIUM, in Botany, a genus of Loureiro's, the name of which alludes to the three nits of the fruit, being derived from τρις, three, and καρδόν, a nut.—Loureir. Cochin. 577.—Clas and order, Monotaet Tetrandria. Nat. Ord. Rhamni, or possibly Ebeni, of Jussieu?


Female, interf ered with the male, Cal. Perianth inferior, minute, in four deep ovate divi lions. Cor. none. Pfl. German superior, roundish; style none; stigma lacinated.

Peric. Drupa roundish, fliehy, of three cells. Seed. Nuts solitary in each cell, roundish, with three furrows.


Female, Calyx in four deep segments. Corolla none. Stigma lacinated. Drupa with three nuts.

T. cochinchenfis.—Found in the woods of Cochinchina, where it is known by the name of Cay Trâm ung. A tree of a middling stature, with ascending branches. Leaves alternate, small, ovate, entire, smooth. Flowers red, in long, simple, slender, aggregate, nearly terminal spikes or clusters. Drupa of a moderate size, yellow, smooth, cat able.—We cannot refer this plant to any described genus, nor are we certain whether it belongs to either of the above natural orders, or to the Euphorbii, or perhaps the Terebin taceae, of Jussieu. Difficulties attend each supposition.

TRICASSES, in Ancient Geography. See TRECASSES.

TRICASTINI, or TRICASTENI, a people of Gallia Narbonensis. Hannibal passed through this country in his way to the Alps. Mention is made of these people at the time of the march of the Gauls into Italy, under the conduct of Bellovicius; and Pliny as well as Ptolemy take notice of them, the former specifying Augusta as their capital. It is certain that they inhabited the left bank of the Rhone, in a small country called Tresca.

TRICCA, a town of Greece, in Thessaly, in the Elykite territory. A modern place, named "Triaca," gives its jult position, and answers to Strabo's account of the situation of this town. Venus was worshipped in this city, and the inhabitants offered her sacrifices of wine.

TRICCIANA, a town of Pannonia, on the route from Sirmium to Carnuntum, between Pons Mauiliitanius and Cimbriae. Anton. Itin.

TRICE, in Geography, one of the Nicobar islands. N. lat. 7° 30'. E. long. 94° 5'.

TRICENNAL. See TRENIAL.

TRICEPS, in Anatomy, a name given to a large muscle of the arm, and to one of the thigh, from the circumstance of its arising by three distinct portions.

Triceps adductor cruris, (triceps femoris; taws-pubis, taws-pubi, and ischi femorii; adductor longus, adductor brevis, and adductor magnus; long, short, and great heads of the triceps). This muscle is placed at the upper and inner part of the thigh, consisting of three flattened portions, distinct from each other, making up the large mafs of muscle on the inside of the limb, and extending from the pelvis to the linea alperea of the thigh-bone.

The long head of the triceps, adductor longus or primus, the first in order of the three portions towards the front, is elongated and flattened, narrow above, and considerably wider below, and extends from the front of the pubes to the middle of the linea alperea. It arises by a narrow but strong tendon from the pubes, close to the symphysis; the muscle descends, passing at the same time obliquely outwards and backwards, and increasing greatly in breadth: it terminates below in a broad and flat aponeurosis, fixed to the middle of the linea alperea, in an extent of about three inches. Some fibres join the tendon of the adductor magnus, while others unite with the vastus externus. The facia lata, the fatorinus, and the crural artery, cover it in front; it covers behind the two other adductors. Its outer edge is parallel to the inner margin of the pectinals, and connected to it by a cellular line: its inner margin is much longer, and covered, in nearly its whole extent, by the gracilis.

The short head, adductor brevis or secundus, is also of a flattened figure, placed at the upper and inner part of the thigh, and extending from the pubes to the upper part of the
TRI

linea afera. It arifes, principally by flechy fibres, from the anterior surface of the body and ramus of the pubes; it paffes obliquely downwards and outwards, with a little obliquity backwards, becoming broader and thinner, and having an attachment of about three inches to the linea afera, from the little trochanter downwards. Here it is closely connected to the two other adductors, and to the pectoralis. The perforating arteries go through its fibres. The pectoralis and adductor longus cover it in front; the adductor magnus behind. The inner edge is partly covered by the gracilis, partly concealed by the frift and third adductors: the outer correfponds to the obturator externus and the tendon of the pefos magnus.

The adductor magnus or tertius, or the great head, is a broad and thick mass, flattened, nearly triangular, placed at the inside of the thigh, where it reaches from the ifhiun to the whole length of the linea afera, and to the tubercle of the internal condyle. It arifes, by a strong aponeurosis and by flechy fibres, from the external surface, and from the margin of the ramus and tuberosity of the ifhiun. From this point the muscular fibres spread out into a great breadth, and take very different directions; the superior going nearly tranfverfly, the middle obliquely, and the inferior almoft perpendicularly downwards. The general direcHon of the muscle is from above downwards, and from within outwards. Its attachment begins at the upper end of the linea afera, juft below that of the quadratus: it is fixed to the whole length of that line, being connected to the two preceding muscles. When the linea afera bifurcates at its termination, the adductor magnus divides into two portions; an external or posterior, which ends in a point between the vallus internus and the short head of the biceps; and an internal or anterior, which is connected to the edge of the vallus, and descends with it to the internal condyle. These two portions have between them an interval, occupied by the femoral artery and vein: this interval is covered in front by an aponeurosis, extended from the adductor to the triceps, and paffing over the femoral artery. There are other openings in the aponeurosis for the paffage of the perforating arteries. The adductor magnus is fixed to the linea afera by short aponeurofes; and to the tubercle of the internal condyle by a strong tendon, which is expanded above into a broad aponeurosis. The muscular fibres paſs between the tendon and aponeurofes, which fix the muscle to the ifhiun, and those which are connected to the femur. The internal fibres are very long, and directed obliquely downwards and outwards: the middle ones are shorter, and directed more outwards, and the external or upper are the shortest, and nearly tranverse.

The firft and second adductors, the fartorius, and the crural artery, cover it in front: the femi-tendinosus, femi-membranofus, biceps, gluteus magnus, and fasciate nerve, cover it behind. The inner edge is covered by the gracilis, fartorius, and fadica: the outer edge is the infcription in the linea afera. The upper margin, or the base of the triangle, is parallel and close to the under edge of the quadratus; the lower extremity, or apex, is the tendinous attachment to the condyle.

The triceps will move the thigh in the direcHon of adducHon, or towards the opposite limb: it will carry one thigh across the other, as in fitting fros'-kneèd: it will pref the thighs against any thing between them, as the fides of the horfe in riding. The firft and second heads will bend the hip; the third will extend it, when it has been previously bent. All three will rotate the thigh outwards. By drawing the thighs inwards, the triceps mufcles keep them perpendicularly under the pelvis, fo that they support it, and through it the whole upper parts of the body. When we stand on one leg, the triceps will regulate the degree of inclination of the pelvis over the thigh, and prevent it from falling over on that side.

TRICEPS extenfor cubiti, (triceps brachialis; anconus longus, externus, and internus, Winthrop; fcapulo-humero-olecranien,) a large thick mufcle, of an elongated figure, covering the back of the arm, and extending from the fcapula and humerus to the olecranon. Its long head arifes from the inferior edge of the fcapula, juft below the glenoid cavity, by a flat tendon, about three-quarters of an inch broad; the second or external head commences, in a pointed form, from the back of the humerus, a little below its head; and the third, internal, or shorteft head, begins on the inner and posterior part of the humerus, an inch below the second. The two latter are separated from each other by an interval, in which the profunda humeri major artery runs, accompanied by the radial or muscular spiral nerve: this veielf and nerve continue their course, from the inner to the outer sides of the limb, between the muscle and the bone. Below the points mentioned already, as the origins of the second and third heads, thefe portions arife by flechy fibres from the whole posterior surface of the humerus, except where the radial nerve and the profunda humeri pars, and from the inter-muscular aponeurofes fixed to the lateral ridges of the bone. The long or middle head continues direct from the others for some distance, paſses behind the shoulder-joint, between the teres major and minor mufcles, and in front of the latissimus dorsi; it then joins the two others. It is firft thin and flattened; then increases in fize. The two other heads are pointed and thin above, and increafed gradually; they all then join about the middle of the humerus, which is the thickest part of the muscle, for below it again decreases. From the aponeurosis of the middle head, and from the back of the humerus, the fibres are continued obliquely downwards and backwards into a broad and flat tendon, which covers the lower and posterior part of the muscle, becomes narrower and thicker as it defends, paſses behind the elbow-joint, clofly adhering to its fynovial membrane, and is inerted into the upper and posterior rough extremity of the olecranon. Several fibres are detached from it to the fadica of the fore-arm, and particularly to that part of the fadica which covers the anconus.

The posterior surface of this muscle is convex; covered above by the teres minor and deltoid, and in the reft of its extent, merely by the fadica and skin. The anterior surface is in contact above with the subcapularis, teres major, and latissimus dorsi; with the whole back of the humerus; and with the fynovial membrane at the back of the elbow. The outer edge is fixed to the external ridge of the bone, and to the external intermuscular aponeurosis, the attachment being interrupted only at the paffage of the radial nerve. The internal edge is fixed to the corresponding parts on the infide: the ulnar nerve lies on it. The upper extremity is divided into three portions, forming the three heads already described: the lower extremity is fingle.

The triceps extends the elbow-joint, by moving either the bones of the fore-arm on the arm, or vice verfa. Its long head may carry the arm backwards.

TRICEPS, in Mythology, a furname given to Mercury, because he exercises his functions in heaven, on earth, and in the infernal regions, and is exhibited under three different forms, according to the three different places in which he is employed.

TRICERA, in Botany, from τρίς, three, and κερας, a horn, because of the three horns, originating in the permanent
nent styles, which crown the seed-vessel. Dr. Swartz had
originally called this genus *Cranzia*, but another having
been so named by Schreber, he adopted the above, which is
very expressive.—Swartz Ind. Occ. 331. t. 7. Schreb.
v. 4. (*Cranzia*; Swartz Prodr. 38.)—Clafs and order,
*Monocica Tetrandria*. Nat. Ord. Tricoca, Linn. Euphor-
bis, Juss.

Gen. Ch. Male, *Cal. Periandrum* of one leaf, deeply di-
vided into four lanceolate, acute, erect, coloured segments.
Cor. none. Stam. Filaments four, fleshy, cylindrical, in-
cining to ovate, erect, longer than the calyx; anthers ter-
mal, ovato-lanceolate, acute, erect, furrowed along oneside, recurved after flowering.

Female, in the same tufft, or cluffer, *Cal. Periandrum* of
five ovate, acute, erect, coloured, permanent leaves. Cor.
none. Pijf. German superior, somewhat triangular; fylies
three, short, somewhat conical, separable at length into two
parts; ftigmas linear, longer than the fylies, spreading, re-
curved, channelled, permanent. Peric. Capsule turbinated,
triangular, with three cells, three valves, and three recurved
horas, each horn splitting, by the opening of the elatic
capsule, into two parts. Seeds two in each cell, oblong,
triangular, polished, each enveloped in a whitish membranous
lac tunic.

Eff. Ch. Male, Calyx in four deep segments. Corolla
none. Stamens fleshy.

Female, Calyx of five leaves, inferior. Corolla none. Styles
three. Capsule with three cells, three elastic valves, and
three horns. Seeds in pairs, with a membranous tunic.

333. Willd. n. 1. (*Cranzia levigata*; Sw. Prodr. 38.
Val. Symb. v. 2. 99.)—Leaves ovate-lanceolate, triple-
rilled; veins beneath. Umbels axillary. Native of
bushy hills, in the western part of Jamaica, flowering in
spring. *Swartz*. Vahl received it from Santa Cruz.—A
branching fhrub, two or three feet high; its branches long
and spreading, smooth, leafy, obscurely quadrangular.
Leaves flaked, opposite, two-ranked, an inch long, acute,
convex, entire, very smooth, rather rigid. Foliage
short, round. Flowers whitish, in small, axillary, opposite, flaked
umbels; the males from four to eight, with little white
opposite *bracteas* on their partial flanks; female solitary in
the centre, rather larger, fefeile, conpous for its long
spreading ftigmas. Capsule the size of a large pea, with three
taper horns, exceeding its own length. Seeds black, and
flining, in a loohe white tunic. Dr. Swartz jufly indicates
the affinity of this plant to *Buxus*, from which it is prin-
cipally distinguishft by the want of a corolla, the form of
the filaments and ftigmas, and the tunic of its seeds.

2. T. citrifolia. Lemon-leaved *Tricera*. Willd. n. 3.
—*Leaves ovate-oblong, pointed, triple-rilled, veiny on
both sides. Clusters axillary.*—Gathered by M. Brede-
meyer in the Caraccas. A fhrub fifteen feet high, refem-
bling the Coffee-tree, branched, with a pale-grey bark, and
hard yellow wood. Leaves rigid and thining, four inches
long, and two broad, on short falks. Clusters about an
inch in length, of about ten white male flowers, on short,
alternate partial falks, with minute, acute *bracteas*, and one
solitary, fefeile, terminal female flower. Filaments a little
compressed, most tuftid in the upper part. Fruit much
in the foregoing.

3. T. cordifolia. Heart-leaved *Tricera*. Willd. n. 3.
—*Leaves elliptical, obtuse, veiny; somewhat heart-shaped
at the base. Flowers in lateral tuffs.*—Native of the
West Indies.—A fhrub, with round grey *branches*; the
young ones somewhat quadrant, smooth. Leaves oppo-
site, falked, half an inch long, corous, entire, finely
veined on both fides, sometimes emarginate; thinning above;
paler beneath. Flowers small, on the last year's branches.
Willdenow.

TRICEROS, a genus of Loureiro's, has precisely the
same derivation as *Tricera*. (See that article.) The
latter being a clear and well-established genus, we cannot
allow one whose history is obscure, and which may possibly
be already known to systematic botanists, under some other
denomination, to "exalt its horns" against its brother.
As to priority of date, there is little to confider, they having
been published within a year of each other, the author of
each thinking his the original name. We shall, with-
standing, here give the characters of the *Tricera*, for the
information of those who may wish to inquire what it is.—
Loureir. Cochinchl. 184. — Clafs and order, *Pentandria*

Gen. Ch. *Cal. Periandrum* inferior, of five acute, spred-
ng, permanent leaves. Cor. Petals five, oblong, spreading,
longer than the calyx. Stam. Filaments five, capillary,
about the length of the petals; anthers ovate, of two cells.
Pijf. German superior, roundifh, unequal; fylies three,
short, distant from each other at the base; ftigmas fimple.
Peric. Berry corous, round, at the base, with three
horns at the top, of three cells. Seeds roundifh, pointed,
two in each cell.

Eff. Ch. Calyx of five leaves. Petals five, oblong,
Berry superior, of three cells. Seeds two in each cell.

Obf. Loureir fays "bacea dfermens," by which, ac-
cording to his frequent mode of expression, he means there
are two feeds in each of the three cells; at leafl, fo we feel
ourfselves oblige here to understand him.

1. T. cochinchenis. Cay áu rang of the natives of
Cochinchna, where this plant grows wild on the hills. It is
a tree of a middling stature, with spreading branches. Leaves
bipinnate, with two pair of ovate, pointed, ferrated, rigid
leaflets, bides a terminal one, in each subdivision. Flowers
white, in loofe, nearly terminal, clusters. Berries small,
ufelies.

TRICTO, in Geography, a town of Naples, in Cala-
Bria Citra 14 miles E.S.E. of Scalea.

TRICHECHUS, in Zooloivy, a genus of the order of
Bras, and clafs of Mammalia, in the Linnean fystem: the
characters of which are, that it has no fore-teeth in the
full-grown animal, either above or below; that it has foltary
ftuks in the upper jaw; that the grinders on both fides are
formed of a rugged forny ifubflance; that the lips are gen-
imated or doubled; and the hinder feet, at the extremity of
the body, united into a fin.

This genus is altogether marine, comprehending few
species. Gmelin, in his edition of the Linnean Syftem,
enumerates the three following

Species and Varieties.

ROSMARUS, the Rosmarus of Johnston, the Morfe of
Baffon, the Sea-borf of Ray and Ellis, and the Arctic
Wurfs of Pennant and Cook's late voyage. It is charac-
terized by its dilant, exfected ftuks. It inhabitsthe Northern
feas, and chiefly within the arctic circle. It grows to a
large ifize, having been found 18 feet long, and 12 feet in
girth round the body. Its form is inelegant; having a
small head, short neck, thick body, and short legs; the lips
thick, and the upper one cleft into two large rounded lobes,
the surface having numerous semi-transparent bristles of a
yellowish tinge, and about the ifize of a fraw in diameter,
and three ifeaces long, pointed at their extremities; the
eyes small; round orifices instead of ears; the skin thick and wrinkled, and scattered over with short brownish hairs; with five toes on each foot, connected by webs; the hind-feet broader than the fore-feet, and the tail very short. In the upper jaw are two long tusks, sometimes two feet but generally about one foot in length, without cutting teeth, and with four roundish grinders. These animals are found about the northern parts of America, in the gulf of St. Lawrence between 47° and 48° lat., in Davis's Straits, and within Hudson's bay in lat. 62°; in great numbers about Spitzbergen, also on the coast of Greenland and of Nova Zembla, and on the headlands extending towards the north pole. They are gregarious, produce their young, one at a time, early in the spring, and feed on sea-plants, shell-fish, &c.

Unprovoked the walrus is harmless, otherwise furious and vindictive. The female, when surprised on the ice, flings its young into the sea, plunges after it, and having carried it to a safe distance, returns with great rage to revenge the injury. They sometimes flay their teeth in the boats, to sink them, or crawl under them, to overcast them, indicating, by gnashing their teeth and roaring frightfully, great tokens of rage. Their attachment to one another is very strong; for a wounded walrus plunges to the bottom, and rises again suddenly with a number of attendants to attack the boat whence they received insult. They are said to lie on the ice in herds of many hundreds, loudly roaring, and giving notice of ice in the night or in a fog, when it could not be seen: some of the herd are always on the watch, who, on the approach of danger, awaken the rest. They are soon frightened by a flash in the moulquet-pan, and plunge into the deep; but the female will defend the young to the last, on the ice or in the water; nor will the young one quit the dam, though he be dead. In the gulf of St. Lawrence, this animal is called a sea-cow, and it is said to resemble a cow much more than a horse, which name may probably be a corruption of the Russian name Morze. The teeth of the walrus are used for ivory: the animals are killed chiefly for the sake of the oil; and it is said that a very strong and elastic leather may be prepared from the skin.

DUGONG, the Dugen of Buffon, and the Indian Walrus of Pennant, with approximate, expired tusks. This animal inhabits the seas about the Cape of Good Hope and the Philippine islands.

MANATUS, the Manati or Sea-cow of Ray, and Lemanis of Buffon; without tusks, or slightly hairy; and with a horizontal tail in place of hind-feet. Found in the larger rivers as well as seas of Guiana, and growing to the length of 16 or 18 feet; the skin being dark-brown, with scattered hairs upon it; the feet with five toes; the body nearly of the same thickness to the tail, when it suddenly narrows; the tail flat, of the shape of a spatula, thicker in the middle, and thinner towards the edges. The T. Chloris, or Clufius's Manati, is supposed to be a variety; it grows to an enormous size in the South American rivers. As an article of food, it is said to be superior to any other animal of this genus, particularly the young. It is taken by means of harpoons. The Indians take great numbers, by making dams across the mouths of the shallow lakes formed by the floods. Dr. Shaw mentions a manati, called by the inhabitants of the country, on account of its gentle nature, "Matum," which, at the time of the arrival of the Spaniards, was kept by a prince of Hispaniola in a lake adjoining to his residence: it hated the Spaniards, but would offer itself to its Indian favourites, and carry over the lake ten at a time, flinging and playing on its back. The T. Hydropitheccus, or Sea-ape Manati of Pennant, is only known from the description of Steller, who, near the coast of America, saw a singular animal which he named a sea-ape, and which Pennant supposed to belong to this genus. It was an animal that delighted in frolic, and sported like a monkey.

T. Augrulis, the variety z of T. manatus, according to Gmelin's Linnaeus, but a distinct species in Shaw's Zoology; hairy, with four-toed ungualate feet, or with a horizontal tail in place of hind-feet; the round-tailed Manati of Pennant; growing to the length of 14 or 15 feet, and found in the rivers of Africa, particularly in the Senegal. The specimen in the Leverian Museum was about six feet and a half long, and three feet eight inches in circumference in the thickest part of the body, and in the thinnest part near the tail about two feet two inches. The flesh of this animal is said to resemble veal; but it is chiefly killed by the Negroes for the sake of its blubber or fat.

T. Borcaulis, a variety of T. manatus in Gmelin's edition of Linnaeus, but a distinct species in Shaw's Zoology; hairy, with feet furnished neither with toes nor nails; or with a horizontal tail in place of hind-feet, the white-tailed Manati of Pennant. It approaches nearly to the whale tribe; it never goes ashore, nor attempts to climb the rocks, like the walrus and the seal. It brings forth in the water, and, like the whale, flocks its young in that element. It inhabits the seas about Bering's and the other Aleutian islands, but never appears off Kamtschatka, unless blown thither by a tempest. It is the same species that inhabits near Rodriguez, or Diego Reys, an island east of the Mauritius, and probably extending to New Holland. These animals live perpetually in the water, but in calm weather frequent the mouths of rivers in great numbers, and approach in time of flood so near the land, that they will suffer themselves to be flattered with the hand; but if hurt, swim out to the sea, prefently returning again. They live in families, one near another; each consisting of a male, a female, a half-grown young one, and a very small one. The affection between the male and female is so great, that if the latter is attacked, the former will defend her to the utmost; and if she is killed, will follow her carcass to the shore, and for some days swim near the place where it was landed. They are very voracious, and when full of the fuit that grow in the sea, fall asleep on their backs. The back and flanks are generally above water, and gulls are found perching on their backs, in order to pick up the insects which they find upon them. They are taken by harpoons fixed to a strong cord; but when struck, it requires the force of thirty men to draw them on shore. When a manati is struck, its companions swim to its assistance, and make many efforts to overturn the boat, or break the rope of the harpoon, and others will strike at the harpoon with their tails. They make a noise, by loud breathing, like the snorting of a horse. Their size is enormous, some being 25 feet long, and 6000 lbs in weight. The circumference of the body near the shoulders is 12 feet, about the belly 20, near the tail 4 feet 8 inches, the head 31 inches, the neck near seven feet; and hence we may infer the deformity of the animal. Near the shoulders are two feet, or rather fins, two feet inches long, without fingers or nails; beneath they are concave, and covered with hair bristles; the tail is thick, strong, and horizontal, terminating in a thick black fin, and resembling the substance of whale bone; the skin is thick, hard, and black, unequal on its surface, like the bark of oak, so hard as scarcely to be cut with an axe, and without hair; beneath the skin is a thick blubber, tallow like oil of almonds. The flesh is coarser than beef, and will not soon putrefy; that of the young ones has the taffe of veal. The skin

TRICHETERÆ, in Natural History, the name of a genus of fossils, of the class of fibraria; the characters of which are, that they are not elastic, and are composed of straight and continuous filaments.

The word is derived from the Greek τριχής, capillary or fibres. The bodies of this genus are divided into those which have narrower filaments; and there are six known species of it, all which burn very readily to a fine powder, like the gypum; and some of them are found in particular places in such great abundance, that it would be very advantageous to collect and burn them. Hill.

TRICHESTRUM, the name of a genus of fossils, of the class of the felenites, but differing extremely in figure and structure from the common kinds.

The word is derived from the Greek τριχής, hairs or filaments, and αερής, a hair, and expresses a set of bodies, composed of filaments arranged into the form of a hair. The felenite of this genus are composed of filaments, scarcely any where visible arranged into plates or scales, but disposed in form of a radiated hair, made up of a number of disjunct fibres.

Of this genus there is only one known species, which is of a pale brown, and is composed of extremely fine and slender filaments. It is formed like the lepadinum in the accidentally open cracks in the septaria, or ludus Helmontii, and is no other way different from the bodies of that genus, than as in all the felenite the plates they are composed of are made up of filaments nicely arranged: in this, as in some other of those bodies, the filaments have never arranged themselves into plates at all, but are disposed into the form of a hair composed of single threads. This body very readily and regularly splits according to the arrangements of the fibres; and is in some parts tolerably pellucid.

It is found only in one place, so far as is yet known, which is under the cliffs of Sheppey island, in Kent; where it is very plentiful, and makes a very elegant figure on the broken masses of septaria, which are in immense numbers strewn upon the shore. Hill.

TRICHIA, in Botany, first, we believe, received its name from Haller, though he admitted some things into this genus of Fungi, which other botanists have rejected, or referred to other places. The above name is formed from τριχής, a hair, or bristle, in allusion to the internal masts of elastic fibres, gradually expanding after the head burfts. — Hall. Hist. v. 3. 114. Perf. Syn. Fung. 176. Lamarck Illust. 1. 896. — Clads and order, Cryptogamia Fungi. Nat. Ord. Fungi. Eff. Ch. Head at length burfting irregularly, permanent. Internal fibres compact, attached to the base of the head, expanding elastically, and discharging the powdery feeds.

To shew the limits of this genus, as defined by the most eminent botanists in this department, we shall give a comprehended view of Perfoon's eleven species.

Sect. 1. Head turbinata, or pear-shaped.

1. T. Botrytis. "Perf. Dip. Meth. 9. and 54." ("T. pyriformis; Hoff. Veg. Crypt. v. 2. t. 1. f. 1." ) — Stalked, clustered, opaque, dark red; flaks longer than the heads, combined, somewhat racemose. — Found on decaying trunks of trees in autumn. Several specimens, cohering together, form a sort of tuft. — Perfoon mentions a small and simple-stalked variety, with a solitary head, which he supposed may be T. serotina of Schradier's Journal, v. 2. 67. t. 3. f. 1, (not f. 2, as erroneously cited by the author, and by Perfoon; that being Stilbium tomens-tum, p. 65.) — The figure having been so widely mistaken, may account for the doubt expressed; but we are left in great uncertainty as to what Perfoon intended by this variety.

2. T. rubiformis. "Perf. Dip. Meth. 54. t. 4. f. 3. and t. 1. f. 3." (T. n. 2167; Hall. Hist. v. 3. 115. t. 48. f. 5.) — Stalked, clustered, of a shining blue; flaks combined, spreading at the base, shorter than the heads. — Not rare on the rotten bark of trees in autumn. There is a smaller variety, of a red or rusty aspect. Perfoon is remarkably incorrect in his citation of Haller, (n. 2162. t. 40. f. 2.)

3. T. fallax. Perf. Obf. Mycol. falc. 1. 59. t. 3. f. 4. 5. ("Clathrus flippitatus, reticulo deciduo; Schmid. Is. t. 33. f. 1—18." Sphaerocarpus ficicoides; Bull. Fung. v. 1. 130. t. 417. f. 3; excluding the synonyms. Mucor minutus; Jacq. Astr. t. 299.) — Simple, stalked; at first red; then of a dull grey. Bale of the head, and top of the flaks, plaited. — Found in autumn, upon soft rotten wood. The head when young is bright red, and roundish; by age it becomes pear-shaped, on a flak about its own length, and altogether of a dirty flat-colour, cracking and expanding at the top into a kind of cup. Jacquin's figure represents the young, Bulliard's the old, plant.

4. T. cladata. Perf. Obf. Mycol. falc. 2. 34. — "Simple, yellow and shining. Stalk rugged, elongated, tapering downwards." — Found on the trunks of trees, either solitary, or coiling dense tufts. It is among the larger species. The flak is slender, of a reddish-yellow. We have seen no specimen nor figure.

5. T. migripes. Perf. n. 5. (T. pyriformis; Perf. Obf. Mycol. falc. 2. 33. Bull. Fung. v. 1. 120. t. 417. f. 2.) — Rather scattered. Head pear-shaped, yellowish, longer than the blackish flak. — On the trunks of trees, but rare. The head is obovate and obtuse. Stalk half a line long, black, flading on a manifest membranous bafe common to many individuals. Perfoon remarks, that the flak in Bulliard's plate is thicker than his, besides being of the same colour as the head. He mentions also a smaller, common variety, verging towards an olive hue, and more brittle than the above-described. The following, originally thought distinct, are now reduced by Perfoon to the species before us.


7. T. cylindrica. Ibid. — Rather scattered, ochre-coloured. Heads cylindrical or ovate, contrasted in the middle. Stalk blackish, extremely short. — A pretty little fungus, occurring rarely on mosses, or the trunks of trees.

8. T. vulgaris. Ibid. 32. (T. turbinata; Sowerb. Fung. t. 85.) — Scattered. Head roundish, somewhat turbinata. Stalk blackish, extremely short; sometimes entirely wanting. — Frequent after heavy rains in autumn, upon rotten beech-trees; appearing when young in the form of white granulations, turning afterwards into the colour of yellow ochre, and more opaque. The flak in an early state is hardly distinguishable. Mr. Sowerby's synonym seems to us to belong to the following, as he himself supposes.

I. Florence. I."

7. T. albaea. Perf. Obs. Mycol. f. c. i. 62.—Scattered, fettie, roundish, or ovobate, abrupt at the base, olive-coloured. Internal hairs compact, yellowish.—Found rarely on the trunks of trees. Heads globular, or hemispherical, becoming by mutual pressure, when crowded, oblong, or somewhat cylindrical. Peronoff is doubtful whether this be a distinct species. We have seen no specimen.

Sect. 2. Head round, or kidney-shaped.

8. T. nitens. Perf. Obs. Mycol. f. c. i. 62. ("Lyco-perdon favagioneum; Batfich Elench. Fung. 257. t. 173.")—Crowded, fettie, globular, of a shining yellow or cinnamon-colour.—Found in autumn, about the decaying trunks of fir-trees, as well as on beeches. In the former case it is more opaque; in the latter more bright and shining. The head is occasionally a little turbinate.

9. T. varia. Perf. Obs. Mycol. f. c. 2. 32. (Lyco-gala latum, omnium minimum, refiforme; Mich. Nov. Gen. 216. t. 195. f. 4).—Rather crowded, yellowish, partly deflexed. Head kidney-shaped, roundish, or somewhat oblong.—Grows on rotten trees in autumn. Found by Michel in the celebrated gardens of Boboli, behind the palace Pitti, at Florence. He represents it as forming globular masses, the size of a large pea, each plant smaller than poppy-feed. The lateral ones appear to be deflexed, or forced outward, by those in the middle.

Sect. 3. Receptacle elongated, thread-shaped, creeping, simple, or interbranching like veins.

10. T. Serpula. "Perf. Dift. Meth. 10." (Mucor Serpula; Scop. Car. 493. t. 65).—Thread-shaped, unbranched, very long, somewhat zigzag, yellow.—On the trunks of trees in Carniola, near the roots. Scopoli. This is represented as a smooth yellowish thread, creeping like a Serpula, or Worm-shell, and resembling a small animal intelleine. It bursts and discharges, from every part, tufts of fine hairs beflreinkel with yellow powder. Scopoli. T. spongiodes, Villars Dauph. v. 3. 1961, is thought by Peronoff to be a variety of this. But the author's description of "from three to five little oblong, cylindrical, worm-like bodies, whole yellowish internal woolliness suffocates, and confounds them in one woolly mafs," indicates rather some of the former species, or perhaps Ansa Rica.

11. T. reitculata. "Perf. 1c. et Defer. Fung. f. c. 2. 46. t. 12. f. 1." (Lyco-perdon lintricular; Batfich Elench. Fung. 259. t. 30. f. 174).—Thread-shaped, branched, reticulated, yellow.—Found in autumn on the trunks and molly bark of trees, but very rare. We have never heard of this or the preceding in Britain. The present species is described as spreading to the extent of an inch, confluting of a yellow net-work, burbling here and there, and protruding tufts of yellow hairs, enveloping a powder, or seeds, of the same colour.

It will readily be perceived that the species of this genus, however curious, can, as yet, be imperfectly defined; nor are we certain how far the Arcycia, Stenonitis, Cribraria, &c. of Peronoff are entitled to rank as generally distinct.

TRICHIASIS, (derived from TRI, the hair,) in Surgery, sometimes also named entereus, is a faulty inclination of the eye-lashes inwards against the globe of the eye. According to Scarpa, the disease preffents itself under two distinct forms: the first is, where the cilia are turned inwards, without the natural position and direction of the tarsus being at all changed; the second consists in a morbid inclination of the tarsus, and consequentlly of the eye-lash towards the ball of the eye.

The first form of this disease is very rare, nor has it come under the observation of the experienced Scarpa more than once; and in this instance, only some of the hairs had changed their direction. The second species or form of trichiasis, or that which consists in a folding inwards of the tarsus and cilia at the same time, is that which is commonly met with in practice. This may be either complete, affecting the whole of the tarsus; or incomplete, occupying only a certain portion of the edge of the eye-lid, and most frequently near the external angle of the eye. Sometimes the disease is confined to one eye-lid; at other times it affects both; and occasionally the patient is afflicted with it in both eyes.

To these two species of trichiasis, some writers have added a third, which they call difficiliae, and which they suppose to be produced by a double and unusual row of hair. But this third species, as Scarpa observes, is only imaginary, and the reason of such subdivision seems to have arisen from not recollecting what was long ago remarked by Winlow and Albiumus, that although the roots of the cilia appear to be disposed in one line only, they nevertheless form two, three, and in the upper eyelid even four rows of hairs, unequally situated, and as it were confused. Whenever, therefore, in consequence of disease, a certain number of hair are separated from each other in a contrary direction and disorderly manner, the eye-lash will appear to be composed of a new and unusual row of them, while, in fact, there has been no change, either with respect to their number or natural implantation.

It is not an easy matter to determine precisely, says Scarpa, what are the causes which sometimes make a few of the hairs deviate from their natural direction, while the tarsus continues in its right position. They are commonly referred to cicatrices in consequence of previous ulceration, whereby the cilia fall off, and those which are growing are hindered from taking their proper direction. There must, however, be other causes sometimes concerned; for in the case seen by professor Scarpa, two or three hairs were turned inwards against the eye-ball, although there had been no preceding ulceration, nor cicatrices of any part of the tarsus. Indeed Scarpa is inclined to believe, that the small ulcers and fcar which are sometimes formed upon the internal margin of the tarsus, are more likely to produce the second form of the disease, or the inversion of the edge of the eyelid, and consequentlly of the cilia towards the globe of the eye. As these ulcers, when neglected, destroy the internal membrane of the eye-lids near the tarsus, it necessarily follows, that in proportion as they heal and dimmish, they draw along with them and turn inwards the tarsus, and hairs inserted into it. And since these little ulcerations do not always occupy the whole extent of the internal margin of the eye-lid, but are sometimes confined to a few lines, in the middle or extremity, near the external angle of the eye-lid; so after the cicatrices are formed, the whole or part of the hairs are not invariably turned inwards, but only a certain number of them, which correspond to the extent of the ulcers previously situated along the internal edge of the tarsus. Indeed, in every case of imperfect trichiasis from a cicatrix of the inner margin of the eye-lid, the tarsus and cilia are everwhere in their natural situation, except opposite the part where the ulcers formerly existed. Also, if the eye-lid be erected, its internal membrane, near that part of the margin of the eye-lid, will be found pale, rigid, and hardened, the inversion of its cartilaginous border and of the cilia being plainly a consequence of the contraction of the cicatrizied point.
Besides these causes, there are others which may produce the complaint. Chronic ophthalmies of long continuance sometimes have this injurious effect, in consequence of the skin of the eye-lid being kept for a long time in a state of dilatation and oedema, terminating in a relaxation of them. The cartilaginous margin of the eye-lid then loses the proper support of the integuments, inclines towards the eye-ball, and afterwards turns inwards, drawing the eye-lashes along with it in the same improper direction. Long-continued puriform discharge from the ciliary glands, likewise spoils the shape and confinence of the cartilage of the eye-lid, and therefore not unfrequently occasion trichiasis. Scarpa doubts, whether a spasmodic contraction of the orbicularis palpbralurum muscle can ever be a cause of the disease, notwithstanding what Mr. B. Bell has asserted upon the subject.

The annoyance which must necessarily result from the hairs perpetually pressing upon the cornea and white of the eye, may be easily imagined, even by those—who have little acquaintance with surgery. The evil is rendered still greater, by the hairs which are turned inwards becoming much longer and thicker than those which retain their natural direction. And although the trichiasis be confined to one eye, both the eyes usually suffer from the effects of the disease. Indeed, generally the eye on the found side cannot be moved without occasioning pain in that which is exposed to the irritation and friction of the inflected hairs. In almost all instances, both the eyes are very irritable, and incapable of bearing the light. As, in cases of incomplete trichiasis, the patient retains some little power of opening the eye-lids for the purpose of seeing, and that most frequently towards the internal angle of the eye, the head and neck are often inclined in an awkward manner, so that in children a distortion of the neck and shoulders is at last produced, which cannot be rectified without difficulty, even after the trichiasis is cured. Unfortunately, also, children are impatient of the uneasiness arising from the inflected hairs, and therefore, are continually rubbing the eye-lids, which act very much increases all the ill effects of the complaint, such as the varicose chronic ophthalmmy, opacity, and ulceration of the cornea.

The cure of the second species of trichiasis, or that which is commonly met with in practice, is accomplished by artificially evi ting the eye-lid, and fixing it permanently in its natural position, together with the eye-lashes, which so grievously irritate and press against the globe of the eye. According to professor Scarpa, this indication is perfectly fulfilled by the excision of a piece of the skin close to the edge of the eye-lid, of such a breadth and extent, that when the cicatrix is formed, the tarbus and margin of the eye-lid may be turned outwards, and sufficiently separated from the eye-ball, the cicatrix of the integuments affording a point of support fully adequate to the parts in their natural position and direction. Scarpa believes that there are now very few modern surgeons, who, with a view to the radical cure of this disease, place any confidence either in plucking out the inflected eye-lashes, bending them outwards, and retaining them by means of adhesive plaster, or in plucking them out and destroying their roots with cautic; much less in extirpating the edge of the eye-lid along with the hairs, or dividing the orbicularis muscle on the internal surface of the eye-lid, under an idea that the disease is sometimes produced by a spasmodic contraction of it.

The following is the mode of proceeding recommended by Scarpa: the patient being seated in a chair, if an adult, or, if a child, laid upon a table, with the head raised, and firmly held by an assistant, who must stand behind the patient, the surgeon is to pull outward, with the end of a probe, the hairs which irritate the eye. Then, with a pair of deftecting forceps, or the ends of his fore-finger and thumb, (which answer equally well, and, in many cases, much better than forceps,) the operator should lift up a fold of the skin of the affected eye-lid, taking great care that the piece which is taken hold of, corresponds exactly to the middle of the whole extent of the trichiasis; for, as we have already explained, sometimes the whole, sometimes a half, and, in other instances, only a third of the extent of the tarbus is inverted. The surgeon, with his left-hand, must raise the fold of the skin, more or less, according as the relaxation of the integuments, and the inversion of the tarbus, are more or less considerable. The reason of this is exceedingly evident, viz. that the greater the quantity of skin which is raised, the greater is the quantity which will be cut away. Supposing the patient to be an adult, as soon as the fold of skin has been raised in a certain degree, the surgeon must request him to open his eye, and if, in this act, the tarbus and eye-lashes resume their natural place and direction, the portion of skin already raised will be sufficient for the purpose. We must trust to our own judgment with regard to children, as they seldom let us have recourse to the mode of differentiation just related. When the integuments are elevated by means of a pair of deflecting forceps, and care is taken to lay hold of the skin precisely at the middle point of the whole extent of the trichiasis, it necessarily follows, that the consequent section of the skin will form an oval, and that the greatest width of the wound will correspond exactly, or nearly so, to the middle of the eye-lid, and its narrowed parts to the angles, or commissures of the same. This contributes very materially to make the cicatrix correspond to the natural fold of the eye-lid, and hinder the origin of a disease of an opposite nature to the one about to be remedied, towards the angles of the eye, viz. an eversion of the commissures of the eye-lids. See Ectropium.

Besides this caution relative to the situation and figure of the fold of the integuments to be cut off, the surgeon must be careful that the division of the skin be made very near the inverted tarbus. Were this circumstance neglected, the operator might have the mortification of finding, after the wound is healed, that although the eye-lid is shortened, on the whole, from the eye-brow to the place of the recession, yet it is not equally so at the space which is between the edge of the eye-lid and the cicatrix of the skin. Hence the tarbus would remain inverted as before, or not be sufficiently turned outward to keep the eye-lashes from rubbing against the eye. This inconvenience would oblige the patient to submit to a second operation, done lower down than the first.

Things being thus arranged, the surgeon, holding up the fold of skin by means of the forceps in his left-hand, is with a pair of probe-pointed, sharp curved scissors, to cut off the whole of the duplicate, being first sure that one of the blades of the instrument is applied close to the edge of the eye-lid. If both eye-lids should be affected, the same operation must immediately be done upon both of them, with such caution, and in such proportion, as the extent of the disease, and the degree of inversion of each eye-lid may require.

Scarpa next diffuses us from employing any future to unite the wound, and represents, that it will be sufficient to keep the eye-brow as much downward as possible, if the operation has been done on the upper eye-lid, or, if on the lower, to support it against the inferior arch of the orbit, by pressing it from below upwards, so as to keep the edges of the wound from becoming separated. Then the lips of
The wound are to be put into exact contact, by means of strips of adhesive plaster, which should extend from the inferior arch of the orbit to the zygoma, and the support of the wound in apposition will be still more securely effected by placing two compresse, one on the eye-brow, and another on the zygoma, together with a bandage.

On taking off the first dressings, the third day after the operation, the surgeon will find that the patient may open his eye with ease, and that the inverting tarus and eyelashes have resumed their natural position and direction. In the partial or incomplete trichiasis, or that which only occupies a half, or a third of the whole length of the tarus, and in subjects who have had the skin of the eye-lids very loose, Scarpa has often had the pleasure of finding the wound perfectly united on removing the first dressing.

When, however, only a part of the incision has healed, while the rest seems disposed to heal by suppuration and granulation, the surgeon covers the wound with a small piece of lint, spread with the ungument cerise; and if the fore should become flabby, it must be touched, every now and then, with the argumen nitrum, until the cure is perfected, which commonly happens in the course of a fortnight.

Thus far, Scarpa’s observations have related to the radical cure of the second, or most frequent kind of trichiasis.

With regard to the first form of this disease, or that in which the eye-lashes project against the eye-ball, without the natural position of the tarus being at all altered (a case which is fortunately very rare), the accomplishment of a cure is very difficult, since, as we have already explained, neither the pulling out of the hairs, nor burning the situation of their roots, are means at all to be depended upon for producing a complete cure of the disorder; and since turning the tarus out of its natural position would make the patient liable to an irreparable flowing of the tears over the cheek, attended with a chronic thickening of the lining of the eye-lid. The treatment of this species of trichiasis is still imperfectly understood, and seems to claim more attention than appears hitherto to have been paid to it. In the instance of this form of the disease which Scarpa met with, only two or three of the eye-lashes inclined against the eye-ball. He found, on turning the eye-lid a little out, opposite to the situation of the faulty hairs, that he could not, indeed, completely put them in their natural position; but he saw that he could thus remove them so far from the cornea, that they would not rub against it, without altering the position of the eye-lids so much as to occasion a perpetual discharge of the tears over the cheek. And, as in the patient alluded to, the skin about the eye-lid was very tene, Scarpa devised from the above rule, by making an incision with the back of a lancet, near the tarus, three lines long, and he took away a small piece of skin of the same length; but very little more than one line broad. When the cut healed, the operation was found to answer as well as the nature of the case would allow, though the cure was not complete, nor would it have obviated all inconveniences in cafes of greater extent.

The trichiasis being cured, something more always remains to be done, for the purpose of correcting the cause of the disease, as well as curing the disorder of the eye, occasioned by the previous friction and irritation of the inverted hairs. The usual indications are, to restore the tone of the vessels of the conjunctiva, to leffen the swollen Meibomian glands, and to remove any cloudsines of the cornea.

Two new methods of performing the operation, for the cure of trichiasis, have been recently proposed by Dr. Crampton and Mr. Saunders.

The following is the account which Dr. Crampton gives of his plan, which he tried in one instance with complete success. “Let the eye-lid be well turned outwards by an assistant; let the operator then with a lancet divide the broad margin of the tarus completely through, by two perpendicular incisions, one on each side of the inverted hair or hairs; let him then, by a transverse section of the conjunctiva of the eye-lid, unite the extremities of the perpendicular incisions. The portion of cartilage contained within the incisions, can then, if inverted, with ease be restored to its original situation, and retained there by small strips of adhesive plaster, or perhaps, what is better, by a suppositorium palpebrarum, adapted to the length of the portion of the tarus which it is intended to sustain, should one or two hair be displaced without inversion of the tarus.” Effay on the Entropion, p. 55.

Mr. Saunders entertained a favourable opinion of Dr. Crampton’s operation for the cure of the disease in its early stage; but he contended, such a vicious bending of the tarus inward was often the consequence of repeated ophthalmic, attended with ulceration of the conjunctiva and infide of the eye-lid; and that every endeavour to rectify the wrong position of the tarus, and restore its original direction, would be fruitless. Hence, he believed, that its excision was decidedly indicated; an operation which is said to be followed by no pain nor uneasiness, and which is sure in its effect. No particular shortening of the eye-lid ensues; the deformity is materially leffened; and unless the cornea be already too opaque, perfect vision is re-established.

Mr. Saunders directs a piece of thin horn, or a plate of silver, having a curvature corresponding to that of the eye-lid, to be introduced under this part, with its concavity towards the eye-ball. On this instrument the eye-lid is to be stretched. An incision is to be made through the integuments and orbicularis palpebrarum, down to the tarus, immediately behind the roots of the cilia. The cut should extend from the punctum lachrymale to the external angle. The exterior surface of the tarus is then to be dissected, until the orbital margin is exposed, when the conjunctiva is to be cut through directly by the side of the tarus, which must now be disengaged at each extremity. The punctum lachrymale must be left uninjured. The operation is described as being exceedingly simple, and if any embarrassment arises, it is from the hemorrhage of the ciliary artery, the blood sometimes obscuring the punctum lachrymale, just when the operator is about to divide the tarus by the side of it. No dressings are required, it being merely necessary to keep the eye covered for a few days. The skin will continue to be elevated, just as the perfect eye-lid was; and though left completely, yet enough to leave the pupil clear, when the eye is moderately directed upward. In all the cases in which Mr. Saunders operated, a fungus grew from the wound. He recommends the excrescence to be destroyed with cautic, or the knife.

Refpecting this operation, we shall merely observe, that it is more severe than that advised by professor Scarpa, and must leave more disfigurement. Unles, therefore, the latter method prove ineffectual, we see no reason for abandoning it.

Inversion of the lower eye-lid is much less common than that of the upper one. The late Mr. Saunders never saw this disease arise from the same causes which induce it in the upper eye-lid, though he acknowledges the possibility of such a cafe. However, he met with several instances of the affection, in consequence of encysted tumours, which,
as they increased, carried the orbital edge of the tarsus outwards, and, in the same proportion, inclined the ciliary edge towards the globe of the eye.

An inversion of the inferior palpebra is sometimes produced by inflammation and swelling of that part of the conjunctiva which connect the eye-lid with the eye-ball. In cases of ophthalmia, this membrane often forms between the latter parts a thick fold, which is situated just on the inside of the orbital edge of the tarsus, and pushes it outward; while the contraction of the orbicularis muscle turns the ciliary edge inwards, and inclines it between the swelling of the conjunctiva and the eye. In this particular case, Mr. Saunders assures us, that replacing the eye-lid in the early stage of the disease, and maintaining it so, until the ophthalmia has been lessened by proper means, will be found effectual. But when the conjunctiva is much thickened and indurated, Mr. Saunders recommends cutting such diseased part of it away, and the application of compresse to keep the orbital margin of the tarsus inward.

Albinus has recorded a species of trichiasis, which originated from the growth and inversion of one of the hairs upon the caruncula lachrymalis. The plan of relief consisted in plucking out the irritating hair; but, as Scarpa observes, it should have been mentioned whether the hair grew again, and in what direction. Scarpa on Diseases of the Eyes, ch. 4. Saunders on Diseases of the Eyes, chap. 3. Crampton on Entoreon. S. Cooper's Practice of Surgery, p. 308. edit. 3.

TRICHIDES, in Ichthyology, a name applied by the ancients for a fish of the harengiform kind, probably the pilchard, which they called also 'sardina and 'sardella.


Gen. Ch. Cal. Perianth inferior, of one leaf, bell-shaped, short, with five small teeth. Cor. Petals five, lanceolate, spreading. Nectary cylindrical or conical, tubular, with ten teeth, shorter than the petals, formed, as if it were, out of the ten combined filaments. Stam. Filaments none; anthers ten, erect, effile on the margin of the nectary, and rising above it, deciduous. Pfl. Germin superior, obovate, obscurely three-lobed; style short; stigma capitule, with three notches. Peric. Capsule roundish, slightly triangular, of three cells, and three valves at length reflexed, with partitions from the centre of each. Seeds solitary, pendulous, ovate, with a pulpy coat, or tunic.

E. Ch. Calyx with about five small teeth. Petals five. Nectary cylindrical, bearing the anthers on its teeth. Capsule of three cells, and three valves. Seeds solitary, with a pulpy coat.

Obi. The parts of the flower vary, or differ in different species, from five and ten to four and eight. The cells and valves of the capsule are, in some instances, but two, as in the Portea of Cavanilles. The seeds have truly a more or less pulpy coat, though not a distinct tunic. It is remarkable that Cavanilles has not admitted Trichilia into his Differations on Monadelphous Plants, where this genus is as much entitled to a place as any others of Jussieu's Melici. Probably he was not furnised with any materials to describe or delineate the species. The gardens certainly could not supply him.

1. T. birta. Green-flowered Trichilia. Linn. Sp. Pl. 552. Willd. n. 1. Swartz Obs. 171. (T. n. 1; Browne Jam. 278?) Pruno forte affinis arbor, folio alato, flore herbarcio pentaetapelo racememo; Sloane Jam. v. 2. 128. t. 220. f. 1.) -Leaves pinnate, of about seven elliptical, pointed, smooth leaflets. Clusters dense, stamens combined. -Native of Jamaica, in the meadows about Kingston and other places, on a dry gravelly soil. Browne calls it a florbus; Sloane a tree, about twenty feet high, with a smooth greyish bark, and sending out at the height of seven feet, or more, several declining branches. The leaves are feattered, not numerous, pinnate with an odd one; the leaflets opposite, an inch and half long, uniform, smooth, entire, dark green, on short partit flarks. Flowers greenish-white with purple anthers, in axillary compound clusters. Browne says the seeds of all the species are encompassed in a scarlet waxly substance. Linneus, and perhaps Browne, confounded this with the following. We do not find much reason for the specific name birta, which seems more applicable to the following.

2. T. spicoides. White-flowered Trichilia. Jacq. Amer. 128. Hort. Schoenbr. v. 1. 54. t. 102. Willd. n. 2. Swartz Ind. Occ. 730. (Eucymus claudice non ramo, folio alato, fructu rotundo tripyreno; Sloane Jam. v. 2. 103. t. 210. f. 2, 3.) -Leaves pinnate, of about fifteen ovato-lanceolate, pointed leaflets; downy at the edges. Clusters rather lax. Staminis distinct. -Native of mountainous woods in Jamaica and Hispaniola, flowering in the spring. Swartz. In the flowe at Schoenbr, according to Jacquin, it blossoms in September and October. -The stem is fifteen or twenty feet high, slightly branched at the top. Leaves a foot long; their leaflets much more numerous than the former, ovato-lanceolate, not elliptical, more or less hairy, especially at the edges. Clusters several, fewer crowded than in the foregoing. Flowers yellowish or greenish-white. Stamens not united, though closely converging into a cylinder, or cone. Capsule roundish, downy, the size of a small cherry. We should conceive this rather to be Browne's plant, which he terms subbifurata, but we have no specimen to determine the point.

3. T. emetica. Emetic Arabian Trichilia. Vahl Symb. v. 1. 31. Willd. n. 3. (Elcaja; Forsk. Ägypt. -Arab. 127.) -"Leaves pinnate; leaflets elliptical, downy beneath, the outer ones larger." -Frequent on the mountains of Yemen. The Arabs call this tree Roka. The flowers redembrace blooms. The fruit, mixed with perfumes, is used by the Arabian women for washing their hair. The ripe seeds are made into an ointment with oil of Sesamum, against the itch. Forskall found mention of the fruit, in an Arabic book, as an emetic, by the name of Djoum elka, whence he took his barbarous generic name above quoted. He describes this species as a large tree, with alternate downy branches. Leaves alternate, pinnate with an odd one, of nine oval-oblong, thallous leaflets, the lower ones two inches in length, the upper or outer ones three; all smooth above, but, according to Vahl, downy beneath; their common flark, about a fpton long, is also downy. Stipulas none. Stalks axillary, coriaceous panicled. Flowers twice the size of the leaf, greenish-yellow. Stamens united halfway up. Capsule obovate, downy, an inch long, with two seeds in each cell. Forskall, Vahl.

4. T. globa. Smooth Hannah Trichilia. Linn. Syt. Nat. ed. 12. v. 2. 294. Willd. n. 4. (T. havanaensis; Jacq. Amer. 129. t. 175. f. 38.) -Leaves pinnate; leaflets obovate, obtuse, smooth; tapering at the base; the outer-most
moist gradually large.—Native of mountainous woods about
the Hawaiian.—A lofty, branched, spreading tree, exhal- ing
a fetid, very disagreeable scent. Leaves of from five to seven
smooth and shining leaflets, nearly sessile; on a slightly
winged stalk, about five inches long. Clusters axillary, very

Willd. n. 5. (Portea ovata; Cavan. Diff. 369. t. 215.)—Leaves pinnate; leaflets smooth, membranous, elliptic-
oblance. Clusters axillary, simple, somewhat aggregate.
Flowers four-cleft, octandrous. Captiles of two valves only.
—Native of bushy places, in the mountainous parts of His-
paniola, flowering in February and March. A tree, whose
trunk is from fifteen to twenty feet high, branched, smooth,
with nearly horizontal, smooth, round, subdivided branches.
Leaves large and handlobe, thin, reticulated with innumera-
able veins. Leaflets from two to five inches long, the outer-
most gradually larger, the partial stalk of the terminal one
not longer than the rest. Clusters about an inch long, usu-
ally two or three together, somewhat downy, or silky.
Flowers white. Calyx and petals downy. Neatly, or eight
combined filaments, externally smooth, hairy within at the
summit. Captile roundish, of two cells and two valves, with
only one seed in each cell, one above the other, invested with
scarlet viscid pulp.

6. T. molehota. Musky Trichilia, or Musk-wood. Swartz
Ind. Occ. 735. Willd. n. 6.—Leaves alternately pinnate;
leaflets ovate, pointed, smooth. Clusters axillary, compound.
Flowers four or five-cleft, monopetalous. Neatly unidi-
vided. Captile with one seed.—Found in old woods of the
northern part of Jamaica, flowering in May. The inhabi-
tants know this tree by the name of Musk-wood, because
every part, the bark, bruised leaves, flowers, and fruit, smell
powerfully of musk. The pulp of the seed has a sweet taint.
The trunk is twenty feet high, or more. Leaflets alternate,
reapy, shining on the upper side; on very short partial
stalks; their common flaky hoary. Clusters solitary, erect,
of many small whitish flowers. Calyx downy. Corolla in
four or five deep ovoate segments, with a short tube. Neatly
scarcey longer than the tube of the corolla, undivided, bear-
ing rarely more than eight anthers, though the corolla is
generally five-cleft. Captile downy, of three or four valves.
Seed solitary, like a drupa with a brittle skin, and a juicy rich
scarlet pulp, including a hard oblong kernel, separable into
two parts.

t. 637. Alt. Epit. 375.—Leaves oppositely pinnate;
leaflets elliptic-lanceolate, pointed, smooth. Clusters ax-
illary, compound, denile. Petals four. Neatly in ten
dozen-pointed segments, with a slightly flattened anther be-
tween the points.—Native of the West Indies? It was sent
by Dr. A. Anderson, from the botanic garden at St. Vin-
cent's to Sir Abraham Hume, about the year 1801, and
flowered in his hove at Wormleybury, in 1816. The plant
has a musky scent, but appears otherwise different from the
last. The leaflets are seven or nine; their common flaky
smooth, except when very young. Flowers pale green,
numerous, in short, denile, compound clusters. We find them,
as described in Mr. Andrews's work, with four broad-ovoate
sepales, though the neatlily consists of ten flat seg-
ments, united half way up, deeply forked at the summit, and
each bearing from the fork an ovate, inxelled, two-celled
anther, on a very short slender flaky, or filament. Nothing
is known of the fruit.

Forl. Prodr. 35. Willd. n. 7.—"Leaves pinnate; leaflets
ovate. Clusters axillary, compound."—Gathered by
Forster in New Zeeland. His specific character, all we
know of the plant, is not sufficient to distinguish it from our
fourth species, T. glabra, though the two species are
probably widely different.

Wild. n. 8.—"Leaves pinnate; leaflets lanceolate, acute.
Clusters axillary, repeatedly compound."—Native of the
island of Namoka.

10. T. glandulosa. Glandular-veined Trichilia. Leaves
pinnate; leaflets five or seven, elliptic-lanceolate, bluntly
pointed, with axillary hairs on their veins beneath. Petals
four. Neatly undivided. Stigma depressed.—Native of New
South Wales, near Port Jackson. A specimen from
those was communicated to us by Sir Joseph Banks, under
the name of {T. olandra of Solander, which not being pub-
lished, we presume to change, as the octandrous species
of this genus are numerous, though this only was known
to the great botanists who first discovered it. The leaves
agree nearly with T. heterophylla, hereafter described, in
size and shape, but are all pinnate, and remarkable for axillary
glands, bearing tufts of hairs, along the mid-rib of each leaf
beneath, as in the Laurustinus, of which we perceive no indi-
cations in any other species, except perhaps the first. Clusters
axillary, solitary, falked, an inch or two in length, simple,
of few flowers. Calyx four-cleft, minutely fringed. Petals
four. Neatly undivided. Anthers eight, falkile. Stigma
capitate. broad. Captile triangular, depressed, with three
divided lobes. Seeds in a red, pulpy, elastic tunic.

(Portea mucronata; Cavan. Diff. 370. t. 216.)—Leaves
pinnate or ternate; leaflets elliptic-ovate, pointed. Clus-
ters simple, axillary and terminal. Petals four. Neatly
undivided. Anthers eight. Stigma club-shaped.—Gathered
by Commeron in Madagascar. Leaves smooth; of three or
five flaked, mostly elliptical, taper-pointed leaflets, near two
inches long. Clusters an inch long, solitary or in pairs.
Flowers small, four-cleft. Fruit unknown.

12. T. trifoliiata. Three-leaved West Indian Trichilia.
Vahl Symb. v. 1. 31. (T. quae Halefia Loefflingi; Loej.
It. 188.)—Leaves ternate, leaflets obovate, polished, ob-
tate; tapering at the base; the odd one much the largest.
—Native of South America, and some of the West Indian
islands, flowering in April and May. A tree fifteen feet high,
exhaling from every part a disagreeable, though not power-
ful, odour. Leaves alternate, falked; their two opposite
leaflets an inch long, the odd one two inches; all very ob-
tate, tapering greatly at the base, without any partial flalks.
Clusters axillary, very short, of about fix small, whitish, fiv-
cleft flowers. Captile green, with brownish dots, globose,
of three valves. Seeds with a scarlet skin. The negro
women are said to procure abortion by a decoction of the roots.
Jacquin.

Vahl Symb. v. 1. 31. Willd. n. 11. (Mela Koetjape;
Burm. Ind. 101, excluding Plukenet's synonym.)—Leaves
ternate; leaflets ovate, acute; their ribs hairy beneath.
—Native of Java. Branches downy at the extremity. Leaves
flaked; leaflets on short flalsks, entire, two inches long, and
we presume all three about equal in size; common flaky
downy, the length of the leaflets, shorter than the axillary
upright flower-flasks. Lengths in short dense panicles, with
a branched bract at the base of each. Calyx and corolla
villous.

("Turrea virens; Hellenius in Stockh. Transf. 1788. 294.
t. 10. f. 1." We suspeét an error in the page.)—"Leaves
simple,
simple, ovate, emarginate. Branches spinous."—Native of the East Indies. Fruit a berry of three cells, with a seed in each; hence this plant seems intermediate between Trichilia and Limonia. We know nothing of it, but there appears little reason to place it here.

The genus Trichilia is sufficiently natural, not withstanding the aberrations of structure in the notary, or flower, and of number in other parts of the flower. The species are by no means well determined, or correctly named. One alone has appeared in the European floras, nor are well-ascertained specimens frequent in collections. The presence or absence of axillary glands on the leaves, and the structure of the parts bearing the anthers, whatever it may be called, seems to prove the best marks of specific distinction. The seeds in T. glandulosa, the only one whose fruit has fallen under our examination, are each enclosed in a rigid, elastic, permanent, bivalve tunic, whose outer is clothed with red pulp. Whether this be precisely the case in the real, the descriptions of authors are not exact, nor consistent, enough to help us to determine.


The species of this genus are herbaceous, generally perennial, with alternate leaves. Flowers terminal, capitulate or spikelike, each accompanied by three membranaceous filaments. The hairs of the calyx, at first close, afterwards become extended, and give the segments a feathery aspect. Trichinium is truly, as its learned author observes, very closely related to Plutus; see that article. We should indeed feel no scruple in considering them one genus. Perhaps they ought strictly to be referred to the class Monadelphia, or at least they, and their Limnanthes genus Gymnophiona, Aethruranthes, Calophya, &c. should be indicated at the head of that class, for the convenience of young botanists. Why the latter were not all placed there by the author of the sexual system, to the great relief of his fifth class, can only be attributed to his peculiar idea of the function of their flowers. He calls a nectarium, what Mr. Brown efeems the united bafe of their filaments; but we believe an enlarged consideration of the whole tribe will justify the latter opinion.


3. T. dissecta.—Leaves linear, very narrow, smooth as well as the branches. Spike elongated, rather lax.—From the same country.

4. T. spatulatum.—Radical leaves obovato-spatulate, flat, smooth. Spike cylindrical.—Gathered by Mr. Brown in Van Diemen's island.

5. T. macrocephalum.—Stem-leaves lanceolate, wavy, smooth as well as the angular branches. Spike oblong, with a wolly stalk.—Native of the south coast of New Holland.

6. T. incanum.—Leaves lanceolate, hoary and downy as well as the round branches. Spikes nearly oval, lateral as well as terminal.—Gathered by M. Baudin, on the west coast of New Holland.

We have seen no specimens of this genus, any more than of Plutus above-mentioned.

TRICHIRI, in Geography, a small island in the Grecian Archipelago; 5 miles of. of Specula.

TRICHISMOS, from τρίχις, the hair, in Surgery, a capillary fissure, or fracture of the skull, so called from its being so fine as to resemble a hair put upon the bone.

TRICHURUS, in Ichthyology, a genus of the order of Apodes; the characters of which are, that the head is extended, with lateral opercula or Gill-covers; that the teeth are coniform, and semi-facilitated at the apex or points; that it has seven branchiogenic or gill-membrane rays; that the body is compressed and eniform, and the tail subulated, without any fin; whence it is called lepusurus, and in English needle-tail. There are two

Species.

LEPTURUS or Argenteus; Silvery Trichurus. With the lower jaw longer than the upper; and equally distinguished by the singularity of its shape, and brilliancy of its colour; the body very compressed, tapering towards the extremity, and terminating in a fine point; the whole body, except the fins, of a bright silver-colour; the head narrowing and the mouth wide; the lateral line of a gold-colour, commencing at the gills and continued to the tip of the tail; the dorsal fin moderately wide, transparent, and of a yellowish tinge, commencing almost immediately behind the head, and terminating near the end of the tail in a mere membrane, the other parts being strongly radiated; the pectoral fins small and of an oval shape; without any direct vent-fin, but having a series of very small naked spines or rays, about 110 in number, continued from the vent, which is situated about the middle of the body, to nearly the tip of the tail. Its general length is from two to three feet; it is said to be very voracious, swams with rapidity, and in the pursuit of its prey sometimes leaps into small vessels, which happen to be killing by it. It is a native of the rivers and larger lakes of South America, and considered as an edible fish; it is also found in some parts of India and in China.

INDICUS, or Eleutherius, or Fufus; Brown Trichurus. With jaws of equal length; nearly equal in size to the preceding, but different in the conformation of the jaws, which are of equal length, and in the form of its teeth, which are very minute; the tail lads flender and sharp, and the colour of the whole fish pale brown, variegated with spots of a deeper cast; a native of the Indian seas, and polishing a degree of electrical power.


Gen. Ch. Cul. Perianth inferior, of one leaf, in four or five deep, ovate, acute, spreading, permanent segments. Cor. none. Stam. Filaments numerous (sixty or seventy), capitillary, longer than the calyx, inserted into the receptacle; anthers small, roundish. Pist. German simple, papery, ovate, villous; styles two, thread-shaped, erect, much longer than the stamens, divided at the summit: Hymen obtuse. Peric. Capsule elliptical, with four angles, one cell, and four valves,
vals, clothed all over with numerous rigid, projecting deciduous bristles. Seeds numerous, small, infected into an ovate-oblong, central, unconnected receptacle, and enveloped in a fivelid membrane.

Eff. Ch. Calyx in four or five deep segments. Corolla none. Styles two, divided. Capsule brilly, of one cell and four valves, with many seeds.

1 T. laurifolia. (Ablian guianensis; Aubl. t. 234.) Laurel-leaved Ablian, or Trichocarpus.—Found by Aublet, on the banks of rivers in Guiana, particularly about one which empties itself into the Sinemari river, thirty leagues above its mouth. This tree bears flowers and fruit in November, and is known to the Caribe Indians by the name of Goulouran-Ablian. Its trunk is forty or fifty feet high, about two feet and a half thick, with a smooth reddish bark; the wood white, with some reds on the heart. Branches numerous and widely extended in all directions. Leaves alternate, falked, elliptical, bluntly pointed, entire, rigid, smooth, undulated, with one rib and many transverse veins; their greatest length seven inches; breadth two and a half. Flowers small, in short, simple, axillary or terminal, spreading clusters. Stamens white, with yellow anthers. Capsule, when its bristles are fallen, about the size of a filbert. Its valves are likewise foon deciduous, leaving the seeds en-veloped in a red fivelid membrane. Nothing is recorded of the use or qualities of any part.

TRICHOCEPHALUS, in Zoology, a genus of the Infuforia order of Vermes; the characters of which are, that the body is elastic and contorted, the hinder part thick and elevated, the anterior capillary and of double length, some-times terminating knotty. Of this genus there are fiv species, distributed into two classes: viz.

* With simple Head.

Hominis. Above subercrenated, beneath smooth, fore-part very subtilely frilated; two inches long.

Equi. Two inches and a half long.

Apmi. With tail on both fides furnished with crenated scales; equal to the human.

Muris. With the head three-knotted; found in the intestines of the mouse, between the duodenum and rectum.

Vulpis. With an acute head; neck transversely frilated, and unilateral vehicles. Found in the cocum of the fox.

** With uncinated or hooked Head.

Lacertae. With tail on both sides scaly. Found in the intestines of the lizard.

TRICHODA, a genus of the Infuforia order of Vermes; the characters of which are, that the worm is inconspicuous with the naked eye, pellucid, and hairy on the other part. Gmelin’s edition of Linnaeus comprehends forty-four species.

* Without a Tail.

Patella. Univalve; before and behind furnished with extended unequal bristles. Found in the marshes of Denmark.

Inquinus. Vividated with a green small cylindric bag, and retentile pedicel. Found in very pure fiewater.

Anas. Elongated, with the apex of the neck elongated beneath. Found in pure waters.

Larix. Dilated forward, with a gibbous back. Found in marshes in which the leaves of the poplar putrefy.

Ursula. Smooth, elongated, equal, on the fore-part hairy. Found in putrid infusions of hay and other vegetables.

Sannio. Incurred; above ciliated, below truncated. Found rarely in water furnishing duck-weed.
SULCATA. — With ovate ventricose apex, acuminate, ventral furrow and on both sides hairy; as before.

** With Tail.

TRANSFUGA. — Broadly, before hairy, behind bristly, flattened on one side, mucronated on the other. Found in sea-water for some time kept.

DELPHINUS. — Oblong, before hairy, behind truncated with a reflex tail. Found in hay-water.

LUDIO. — Cirratus, above hairy, with an extended tail. Found rarely in the swampy waters of Denmark.

MUSCULUS. — Oval, on the fore-part hairy, the hinder part caudate. Found in hay-water.

PISCES. — Oblong, on the fore-part hairy, behind very finely extended into a tail; in duckweed-water.

CUNICULUS. — Oblong, before hairy, behind somewhat sharpened; in pure water.

CLAVUS. — Before rounded and hairy, behind with an acuminate tail. Found in marshes.

CLAPA. — Aculeated, hairy in front, with a bent tail. Found in duckweed-water.

CALVA. — Clavated, hairy in front, with a reflexed tail. Found rarely in the marshy waters of Denmark.


Eff. Ch. — Naked. Powder copious, mealy, encompassed with a downy or fluffy coat:

1. T. fuliginoides. Perf. n. 1. — "Large, nearly globular, villous, whitish. Powder bright red, intermixed with filaments of threads." — Found in autumn, on the rotten trunks of Spruce Firs. An inch or two wide, soft, but not melting. The threads to which the seeds are attached radiate through the powdery mass, in little tufts, from a subjacent membrane. Perfon.

2. T. roesum. Hoffm. Germ. v. 2. t. 10. f. 1. Perf. n. 2. (Farnnaria roesna; Sowerb. Fung. t. 360. f. 3.) — Role-coloured, encompassed with a fine, spreading, depressed, filamentous border. Frequent in spring on rotten branches, especially between the wood and bark of the Sallow and Aspen. Half an inch broad, roundish or oblong, with a cobweb-like circumference.

3. T. aurantia. (Farnnaria aurantiaca; Sowerb. ibid. f. 2.) — Tawny, orbicular. Powdery particles somewhat ovate, partly scattered, with a flight filamentous border. On leaves, often forming, as it were, a little net, with a few cottony filaments towards the edges. Sowerb.

4. T. seminariurn. (Farnnaria seminariaria; Sowerb. ibid. f. 1.) — Powder black, in little compact globules, on a white, mealy, slightly fibrous, orbicular base. — Observed by the Rev. J. Holme, of Peter-houfe, Cambridge, on the leaves of a Willow. This contains of little white scattered orbicular spots of a white mealy substance, from a quarter to half an inch broad, lodging several minute deciduous masses of black powder, or seeds.

5. T. virtide. Perf. n. 3. "Dipf. Meth. Fung. 12." (Pyrenium lignorum, vulgar Fude Fung. Mecklenb. v. 1. 33. t. 3. f. 29.) — Roundish or unequal, very fott, with bright-green powder, and whitish fugacious filaments. — Found after autumnal rains, among fragments of fallen branches of trees, or on the limbs of large herbaceous plants. Its substance is extremely soft, two or three lines in diameter. The white cobweb coat opens at the top, and exposes the minute condenfed grains, or powder, of a most beautiful verdigris-green. Perfon, Tode.

6. T. aureum. Perf. n. 4. Obsf. Mycol. fusc. 1. 99. — "Widely expanded. Hairy coat whitish, very thin. Powder dull yellow." — This occurs rarely, in fieves or hothouses, on rotten wood, into which it is sunk. Almost three inches broad, being one of the largest of its genus, but scarcely two lines in thickness. The faggot covering is thin and evanescent. Perfon.


8. T. dabium. Perf. n. 6. (See Perf. Obs. Mycol. fusc. 1. 99.) — Linear, flitily downy; firit whitish, then yellowish; of an uniform fiable subftance. — Frequent on decayed trees in autumn. About half an inch long, and one line broad. There is scarcely any difficult fibrous margin, though the whole fungus appears flitily downy. The inside is dense and cohering, not powdery, nor volatile; fo that Perfon expreffes great doubts concerning the genus of this little production.


10. T. leuc. Perf. n. 8. Obsf. Mycol. fusc. 1. 12. — Whitish, spreading, smooth, turning buff-coloured. Powder yellow. This is found on the ground, as well as spreading over mosses, to the breadth of an inch and half or two inches, but is not among the common species. It is more permanent than fonie others.

11. T. tuberculatum. Perf. n. 9. Obsf. Mycol. fusc. 1. 12. t. 2. f. 8. — Pure white, nearly orbicular; at first downy; afterwards tubercular. Powder grey. — Frequent after great rains, on the ground in shady woods. When young it is very white, of a cobweb texture, but soon becomes greyish. When full-grown the surface is beft with oblong tubercles. In a few days the whole changes to a grey powder.


Gen. Ch. Cal. Perianth inferior, of one leaf, in five deep, erect, permanent segments. Cer. of one petal, wheel-shaped; the length of the calyx; tube short, somewhat funnel-shaped; limb spreading, nearly flat, in five deep, equal, keeled, taper-pointed segments; throat naked. Stam. Filaments five, very short, inserted into the throat of the corolla; anthers oblong, prominent, converging, shorter than the limb, tipped with twisted brilly points, and bound together by their two rows of doral hairs. Pif. Germans four, superior; style central, thread-shaped, longer than the flammis; stigma simple, bluntish. Sechs. Nuts four, ovate, gibbous, half sunk in the cells of the four-winged central column near its summit.

Eff. Ch. Corolla wheel-shaped, with a naked throat. Anthers connected by doral hairs.

Mr. Brown has separated this genus, confiding of three known species, from the Linnéan Borago, for the very fufficient reafon of the corolla having no valves or prominences in
in its throat; to say nothing of the connexion of the anthers, or infection of the seeds. The plants are herbaceous, clothed with pungent bristles; their flowers axillary, or racemose with bracteas. See Borago.

1. T. indicum. Indian Trichodesma. (Borago indica; Linn. Sp. Pl. 197. Willd. Sp. Pl. v. i. 777. Ait. Hort. Kew. v. i. 296. Burragrooides angustifolia, flore pallescete caruleo; Boerh. as above 188, with a plate. Cynoglossooides folio caulem amplaxente; Isnard as above, t. 9.)—Flowers axillary. Segments of the calyx auricled at the base. Seeds without a border. Leaves clasping the stem.—Native of the East Indies. A tender annual, cultivated by Miller, and flowering throughout the summer and autumn. The stem is much branched, rather diffuse. Leaves sessile, oblong, bluntish, entire, rough with hairs and callous points; clasping the stem with their sthightly heart-shaped base. Flowers axillary, solitary, flattened, drooping, white, pale blue, or reddish, with five fluffy spots round the mouth. Calyx hairy, each segment acute, much elongated at the base. Seeds pale, nearly smooth.


3. T. zeylanicum. Ceylon Trichodesma. Br. n. 1. (Borago zeylanica; Linn. Mant. 202. Willd. Sp. Pl. v. i. 777. Ait. Hort. Kew. v. i. 297. Jacq. Coll. v. 3. 169. 1c. Rar. t. 314. Burn. Ind. 41. t. 14. f. 2. Anchnua buglossioideae, lithospermiferae; Pluk. Mant. 13. Phyt. t. 335. f. 4.)—Clusters terminal. Calyx without auricles. Seeds smooth, without a border. Leaves nearly sessile, tapering at the base.—Native of Ceylon, and other parts of the East Indies, as well as New Holland, within the tropic. Dr. Roxburgh sent seeds to Sir Joseph Banks, in 1799. This, like the last, is an annual plant, flowering in the flower in July and August. The herbage is, as Mr. Brown remarks, very variable in its quantity of bristles and soft hairs; the latter, in wild species, are sometimes very abundant, giving the long flowery-stalks, and calyx, more especially, a hoary aspect. The leaves are oblong or obovate, mostly opposite. Clusters leafy. Corolla white and semi-transparent. Seeds ovate, grey, smooth and highly polished, like our Common Gromwell.

TRICHODIUM, received that name from Micaux, who constructed it out of Triticum, a bread, and tetricus, form; or appearance, in allusion to the capillary stalks of the panicle.


1. T. laxiflorum. Spreading Trichodium, or Bristle-grasfs. Michaux as above, 42. t. 8. Pursh n. 1. (Coronocype hermaphroditum, Walt. Carolin. 73. Agrolis seabra; Willd. Sp. Pl. v. i. 370, according to Pursh.)—Stems erect. Leaves upright, linear-lanceolate, with roughish teeth. Calyx-valves lanceolate.—Common in all gravelly situations, from Hudson's bay to Florida, flowering from May to August. Michaux, Pursh. Root perennial. Leaves narrow and short, nearly erect. Panicule short, with very fine capillary stalks, loosely spreading, each branch bearing but a few small flowers about the extremity.

2. T. decumbens. Decumbent Bristle-grasfs. Michaux as above. Pursh n. 2. Ait. Epit. 375. (Coronocype perseram; Walt. Carolin. 74. Agrolis anomalus; Willd. Sp. Pl. v. i. 370. A. Coronocype; Frazer Monogr. with a plate.)—Stems decumbent. Leaves spreading, linear-lanceolate, with smooth lens. Calyx-valves taper-pointed.—On moill hills, and in short grass meadows, from Canada to Carolina, flowering from June to August. Root perennial. This and the foregoing are highly valuable grasses. Pursh. Larger than the first species, with longer and broader smooth leaves, which spread in every direction. Stipula, as Willdenow observes, larger, lanceolate, torn. Panicule large and loose. Flowers about the bise of our Agrolis alba, being twice the bise of the foregoing, and much more numerous.

This, known by the name of Frazer's New American Grasfs, was brought from Carolina by that indefatigable collector, in the year 1788. His friend Mr. Walter, in the Flora Caroliniana, extols this grass as one of the Creator's most precious gifts, which he himself was deigned to make first known to mankind. Kalm had indeed, long ago, sent a specimem to Linnaeus, but without any particular account of its use or distinctions, so that his specimen remained undistinguished from other species, which it much resembles. The solitary valve of the corolla led Mr. Walter to refer this plant to the genus Coronocype, to which it has no other affinity. He was moreover flattered by this name, as occurring with his own idea of the value of his discovery. Nor do we doubt the accuracy of his statements, published in Mr. Frazer's Monograph above cited. Nevertheless, this grass has disappointed the hopes of European cultivators, and has now totally disapparred. "The places that knew it, know it no more." It is not even mentioned in Mr. Sinclair's elaborate and valuable experimental work, the Hortus Gramineus Woburnensis, nor by Mr. Dryander in the Hortus Kewensis, though Mr. Aiton has supplied the latter defect in his Epitome. So difficult is it to cultivate grasses, in general, away from their native situations, for any agricultural profit, that the disappointment we are obliged to record, is no impeculation of the accuracy of those who still reckon our Trichodium among the best grasses in America.


TRICHOGAMILLA, a name of Dr. Patrick Brown's, which he has left, according to his usual custom, unexplained. It appears derived from stiri, a hair, and γ, a flower.
TRI

marriage, alluding to the pubescence enveloping both organs of impregnation.—Browne Jam. 218.—We have seen no spicemen of this plant. It is said to grow close to the beach at Bull-bay, in Jamaica. The stem is shrubby, stiff, simple, three or four feet in height, and as many lines in diameter. Leaves round, smooth, alternate. Flowers small and white. Outer calyx (rather bracteae) two small deciduous leaves; inner cup-shaped, of one leaf, divided half way down into five ovate segments. Corolla of five oblong, abrupt, somewhat spreading petals, or of one petal divided to the bafe. Filaments ten, downy, erect, shorter than the corolla. Anthers roundish. Sepals minute, in the bottom of the calyx. Style downy, the length of the flaments, with a blunted stigma. Drupes the size and appearance of a gall-nut, but light and hollow, globose, woody, thin, with a thin coat, of one cell, inflated, rather uneven in its surface. Nut two, oblong-ovate, two-lobed; one of them usually abortive; the other fixed to the bottom of the drupa, but not half occupying its cavity.

Juifieu, Gen. Pl. 260, supposes this to be the same genus with Chalca or Murraya (see those articles); and Linnaeus has written Chalcas against Browne's description. We prefigure it is the same individual species, which, though of East Indian origin, had accidentally been conveyed to the shores of Jamaica. If this be correct, Browne mislabeled the leaves for simple leaves, and perhaps did not meet with the fruit in its natural more juicy state.

TRICHOMA, in Surgery, the dicasfe more commonly called plica Polonica.

TRICHOMANES, in Botany, an ancient Greek name for some small delicate kind of fern, supposed from the description of Dioscorides, book 4. chap. 137, to be Applenium Trichomanes of Linnaeus, which very well answers to that description. The name, from στριμnez, to grow, (whatever may be the origin of the root of the word), about which etymologists disagree, alludes to the slender filiform flavus, common to most of the fern tribe, which procured them the appellation of Capillary herbs, and the reputation of improving the growth of the human hair. Linnaeus fideled this name for a delicate, pellucid, capillary-flaked genus, to which it is very fitful; more especially if we take into consideration, as he probably did, the peculiar character of a prominent hair or bristle, originating from the receptacle of the seed-veils.—Linn. Gen. 560. Schrebb. 758. Willd. Sp. Pl. v. 5. 498. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 529. Sm. Mem. de l'Acad. de Turin, v. 5. 417. Traets 255. Swartz Fl. 141. Ind. Occ. 1724. Brown Prodr. Nov. Holl. v. 1. 159. Spren- gel Crypt. Engl. ed. 164. t. 5. f. 35. Juff. 16. Lamerick Illusr. t. 871.—Clafs and order, Cryptogamia Filices. Nat. Ord. Filices.

Gen. Ch. Fructifications inferred into the margin of the frond, terminal, distinct, tubular. involucrum of one leaf, urn-shaped, of the texture of the frond, opening outward. Capsules of two valves, bound by a ciliate ring, numerous, sessile on the lower part of a cylindrical common receptacle, or column, whose capillary naked point projects beyond the involucrum.


Obs. Hymenophyllum (see that article) was first separated by the writer of this, from Trichomanes, with which it had, on account of their similar membranous pel- lucid habits, been always confounded. The bivalve involu- crum, enclosing the common receptacle, clearly distinguishes it from the genus before us, whose involucrum has a spreading undivided border.

The second edition of Species Plantarum contains eleven, and the fourteenth edition of Systema Vegetabilium thirteen, species of Trichomanes, as Linnaeus understood the genus. But though from these are deduced what are now referred to Hymenophyllum and Davallia, Willdenow enumerates thirty-four species of genuine Trichomanes. These are distributed into four sections, according to the subdivision of their fronds. We shall select examples.

Sect. I. Frond simple. Twelve species in Willdenow. T. reniforme. Kidney-shaped Brilfe-fern. Forjd. Prodr. 84. Willd. n. t. Schkuhr Crypt. 130 t. 134. R. A. Hedw. Fl. Fic. 3. Fronds kidney-shaped, undivided, on bordered flalks. Gathered by Forlzer, as well as by Mr. A. Menzies, in New Zealand. An elegant very singular fern, with long, creeping, thread-shaped, perennial roots, attached by rigid downy fibres, and throwing up fatterer erect fronds, various in size, each on a simple smooth stalk, from one to six inches high, bordered, or slightly winged, especially in the upper part. The leaf itself is vertical, kidney-shaped, from one and a half to three inches wide, of a dull olive-green, membranous, semi-pellucid, smooth, full of numerous, radiating, repeatedly forked veins; the margin entire, slightly wavy in the larger or older fronds befeft with a row of cup-shaped immersed involucrum, each terminating a vein, and each protruding a rough thick column, twice its own length, bearing a number of pale flining annulated capsulae.

T. membranaceum. Membranous Briflle-fern. Linn. Sp. Pl. 1560. Willd. n. 5. Swartz Ind. Occ. 1724. (Darea americana lichenoides; Petiv. Muf. n. 763. Addianum mucufum, lichenis petrai facie; Plum. Fl. 83. t. 101. f. a. Amer. 34. t. 50. f. a; inaccurately copied in Plut. Phyt. t. 285. f. 3; and again in Petiv. t. 13. f. 5.)—Fronds fefile, dilated upwards, obtuse, undivided, or torn; the margin beft with peltate frutes. Found on wet, often inundated, flones and rocks about the banks of rivers, in Hifpania. This has the colour and membranous tex- ture of the foregoing, but with a fily glofs. Its black, faggy, creeping roots bear flattered fronds, diluitle of flalks, sometimes roundish, but moftly wedge-shaped, from one to three inches high, variously split, dilated, and jagged, beft with innumerable crowded radiating veins, and much resembiling the texture of a bat's wing. The margin, as well as the tip of each fegment, bears brown peltate flakes, whose fze is unknown, but which, as Dr. Swartz remarks, might eafily caufe this fern to be taken for an Addianum, were there not founed on the fame individual, though far more fparingly, the proper ftructuration of a Trichomanes, confining of deeply immersed, flender, tubular involucrum, dilated, orbicular, and roughife at the mouth, each with a prominent (not as Swartz fays a concealed) column.

T. muco fades. Mossy Brifle-fern. Swartz Ind. Occ. 1726. Willd. n. 6. (T. hynemoides; R. A. Hedw. Fl. t. 3. f. 3. Phyllitis scandeais minima, mufe facie, folies membranacae subrotundis; Sloane Jam. v. 74. t. 27. f. 1.)—Fronds roundish-oblong, irregularly fquinted, fawy, obtuse, on short hairy flalks. Involuture prominent, cylin- drical; bivalve at the mouth. Found creeping over the trunks of trees, in low wet places, in Jamaica. The root is black, thick, and woolly, spreading to the extent of several inches. Fronds light green, lying over each other, scarcely more than half an inch wide, with strong, branch- ing, but not parallel or crowded veins; the segments rounded and wavy. Involuture at length flipped as it were, and projecting entirely beyond the leaf on winged flalks; their margin

TRI
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margin of two rounded valves, edged with brown. The
column is certainly prominent. Our description differs from
Dr. Swartz's in some material points, though taken from
his own specimens.

1727. Wildl. n. 9. R. A. Hedw. Fil. t. 3. f. 4, bad.
— Fronds obovate-oblong, nearly sessile, irregularly pinna-
ti'fied, with oblong obtuse segments; their base wedge-
shaped. Involucremmered, its orbicular mouth not
projecting beyond the leaf.—Native of old mossy trunks of
trees, in the mountainous part of Jamaica. If we are
right in our ideas of this species, it is browner and thinner
than the lafr, with a larger frond, but shorter flake; the
veins much less thick and prominent. The involucrum
moreover does not project, till stripped by age, nor is its
margin divided. The column is certainly prominent.
We do not boast, in this case, an original specimen from the
author, and therefore may be mistaken.

Lamarec. T. 1. (T. crispsurn; Linnaeus Pl. ed. 1. 1197.
ed. 2. 1560, excluding the synonymy of Plumer and Pe-
tier.)—Frond lanceolate, pinnaTed; taping at the base;
segments ovate, obtuse, somewhat angular, with zigzag
veins, and mollily solitary fructifications.—Native of the
West Indies; Willdenow says of Guadalupe. A very
elegant and distinct species, sometimes resembling the out-
line of an oak-leaf, but it is more usually of a linear-lan-
culate figure, tapering at each end, four inches, more or
less, in height, light olive, pellucid, finely reticulated, flat,
rarely a little hairy, with elegant, zigzag, equally diphered
veins. Involucrum immersed at the blunt point of each
segment, almost always solitary, its dilated orbicular border
not projecting beyond the leaf. Column slender, prominent,
full twice as long as the involucrum. This seems, by the Lin-
næan herbarium, to be what Linnaeus intended for T. cri-
psum; but it is evident from the specific character and name
that he had full as much in his contemplation Plumer's
t. 86, quoted for a synonym; and the latter being univer-
sal as the true crispsurn, we shall so rest it. See the
next section.

ed. 1. 1198. ed. 2. 1561. Swartz Fil. 145. Wildl.
n. 11. — "Frond lanceolate, pinnaTed, wavy. Flowers
solitary, terminal."—Native of India.—"Frond the length
and breadth of the finger, pinnaTed almost to the mid-rib;
lobes lanceolate, bluntly tattered, acute at the summit,
each of them furnished with a solitary flower at the point.
The frond moreover is pellucid, with alternate veins."—
Such is Linnaeus's description of this species, which no per-
son has ever discovered, and which can only be determined
from his works or herbarium. In the latter nothing pre-
ents itself under this name; but the specimens marked
criium, mentioned under our preceding species, so pre-
cisely answers to this description of polypodioides, that we
cannot but believe it is the very plant, and that Linnaeus
has here fallen into a molt complicated mistake. As we
are, nevertheless, unable to prove this, we would still re-
tain the excellent name of finifnsum, to which those who
think as we do may refer polypodioides as a synonym, with
or without a mark of doubt.

t. 35. Wildl. n. 12.—Barren fronds lanceolate, deeply
pinnaTed; fertile ones linear, pinnaTed, on longer flaks.—
Native of watery mossy places in Guiana. Fronds tufted;
the barren ones leafy, pellucid, of numerous, deep, parallel,
linear, bluntish, somewhat jagged segments, that are
near an inch long; their common flake round, about two
inches in length, nearly smooth; fertile ones fewer, their
flakes erect, five or six inches long, the frond itself four or
five, and only half an inch wide, laxely at all leafy, but
composed of two dense rows of numerous, crowded, flaked,
cylindrical, two-edged involucral cups, each with a small or-
bicircular border, and protruding a long, curved, rough,
light, club-shaped column, twice the length of the involu-
crum itself.

sect. 2. Frond pinnaTed. Three species; Wildl.
T. crispsurn. Crispd Britle-fern. Linnaeus Sp. Pl. 1560?
fil. t. 4. f. 2. (Trichomanes n. 1. Linnaeus Hort. Cliff.
476. Polypodium crispsurn calciferum; Plum. Fil. 67.
t. 86; copied in Petiv. Fil. t. 11. f. 8.)—Frond pin-
nate; leaflets oblong, obtuse, wavy, crisped, hairy, man-
dflowered at the extremity; the upper ones confluence.
—Native of various parts of the West Indies. The tufted
hayfh root bears many lanceolate flaked fronds, about a foot
high, of a light pellucid olive-green, very thin and mem-
branous; their numerous leaflets about an inch long, el-
agently crisped and plaited, copiously veined, clothed with
scattered tawny hairs. The blunt extremity of each leaflet,
except some of the inferior ones, bears from four to five or
more, immersed, rather crowded, tubular involucrum, with orbic-
ular entire slightly dilated mouths. From each pro-ceeds a long
flanker, almost capillary, roughish column, whole point when
entire is blunt, or rather capitate.

T. floribundum. Many-flowered Britle-fern. Wildl.
n. 15. (T. pinnaTum; Swartz Fil. 142. R. A. Hedw.
fil. t. 4. f. 1. T. rhizophylla; Cavanil. Leccion. 279.
Swartz Fil. 142.)—Frond pinnaTed; leaflets lanceolate,
cisseated; the upper ones decurrent, confluence. Fructifica-
tion marginal, fringle-like prominent.—Native of several
parts of the West Indies. Twice the size of the last. The
leaflets are usually near two inches long, above half an inch
broad, alternate, bluntish, nearly smooth, befit with innum-
erable close transverse veins, connected by fine reticulations;
their margin undulated and finely serrated; those of the
barren fronds crowded; of the fertile ones remote, most of
their fratures tipped with a little, brown, cup-shaped, en-
tirely prominent and naked involucrum, with a capitae
column about its own length. Cavaflines speaks of this as
the handomest species he had seen. His description leaves
no doubt as to the identity of his plant, though we have not
seen an instance of any sprouting roots from the tip of the
frond, which probably led Dr. Swartz, without seeing spec-
imens, to adopt it as distinct.

sect. 3. Frond doubly pinnaTed. Six species; Wildl.
1730. Wildl. n. 19. R. A. Hedw. Fil. t. 1.—Frond
pinnaTed; leaflets obtuse, pinnaTed, decurrent, confluence;
airy at the margin and veins; segments often cloven. Stalk
airy.—Found on the trunks of trees, on the lofty moun-
tains of Jamaica. Frond about three inches in length, pale,
pellucid; its tawny-haired flake febrcefo long. Involu-
crum here and there imbedded at the ends of the segments
of each leaflet, with a dilated, fringed, orbicular margin.
Column long, roughish, capitae with a taper point. The
segments of the leaflets are lanceolate, bluntish, not so
generally divided in our specimens as in Hedwig's figure.

1561. Swartz Ind. Occ. 1739? Wildl. n. 21. (Filicula
pyxidifera; Plum. Fil. 74. t. 50. f. E; copied in Petiv.
t. 13. f. 13.)—Frond pinnaTed; leaflets oblong, obtuse,
cisseated, pinnaTed, with linear, obtuse, decurrent, entire,
more three-clad segments. Stalks all winged. Involu-
crum cloaked by a lid bearing the column.—Found by Plu-
mier
mier on molly trees in Hispaniola. He is our only certain authority for this species, the description of Swartz not answering exactly to his account, and the figure in R. A. Hedwig, t. 3. f. 2, indicating something very different. The true T. pyxidifera is so named because the involucrum is formed like a box with a convex lid, through which latter the long prominent column is continued. We have seen indications of no such character in any other species. The root is creeping and hairy. Fronds flaked, three or four inches high, smooth, very thin, their common as well as partial fronds winged throughout, and of the same linear form as the segments of the leaflets, which are notched at the end. Involucrum one or two about the lower part of each principal leaflet cup-shaped, quite closed by the above-mentioned lid.

T. europeum. European Brilie-fern. (T. pyxidifera: Hud.f. 401. Bolt. Fil. 56. t. 35. Hymenophyllum turbridgeae β; Fl. Brit. 1142. H. alatum; Engl. Bot. t. 1417.) Felix humilis repens, foliis pellucidis et splendentiis, caule alato; Dill. in Rait Syn. 127. t. 3. f. 3. 4.;—Frond bipinnate; leaflets oblong, decurrent, pinnatifid, with linear, obtuse, decurrent, entire segments. Stalks all winged. Involucrum open, with a slightly spreading border. Few plants of any country have caused more enquiry, or more diversity of opinion, than this fern, originally discovered by Dr. Richardson "at Belbank, near half a mile from Bingley, Yorkshire, at the head of a remarkable spring." From thence Mr. R. Teedle and Mr. Dickson have brought us young plants, like Dillenius's f. 4, but could find none like his f. 3. The botanists of Ireland have been more fortunate. Mr. J. T. Mackay met with perfect specimens in fruitification, on rocks about the cataract, at the bottom of Turk mountain, Killarney. Some of these, more perfect than what is figured in Engl. Bot., lead us to concur with Mr. Brown's opinion, expressed in his Prodromus, in removing this plant from Hymenophyllum, to the present genus. It was indeed confided by Linneus as not distinct from T. pyxidifera, nor is this opinion fo wide of the truth as it has been supposed. By a comparison with Plumer's figure of the latter, this will be found to differ chiefly in being more compound, with a smaller, more slender, two-edged involucrum, in which we can discover nothing like a lid. Its margin is narrow, but rather spreading. The capfules are few and large, bright yellow, with a broad ring. Column long and prominent. Some appearances in this and other species lead us to believe the column, laden with capfules, is generally protruded out of its involucrum after the capfules are ripe, and it may therefore, in a very early state, be found entirely inclosed therein. This being the only European Trichomanes, we hope our specific name may be allowed, that of alatum being procured; see Willd. n. 17.

T. venosum. Veiny Brilie-fern. Brown Prodr. n. 1.—"Frond pinnate; leaflets linear, veiny, wavy, somewhat crenate; the lower ones lobed or pinnatifid at the base, and bearing a solitary involucrum at their inner margin."—Gathered by Mr. Brown, in the island of Van Diemen, and near Port Jackson, New South Wales. This should seem akin to the two last, but we have seen no specimens.

Seft. 4. Frond tripoly pinnaatifid, or pinnate. Thirteen species; Willd.

T. tricholodium. Capillary Brilie-fern. Swartz Ind. Occ. 1741. Willd. n. 23. (T. tenellum; R. A. Hedw. Fil. t. 3. f. 1.)—Frond tripoly pinnate; leaflets linear, almost capillary, divided, marginate. Involucrum flaked, lateral, solitary, near the base of the principal branches.—In moist, shady, grassy places, in the cooler parts of Jamaica and Hispaniola. This is a peculiarly delicate and slender fern, from two to four inches high, whose ramifications are so exceedingly narrow as to appear capillary, though the ultimate divisions are truly leafy, consisting of a wiry midrib, bordered with a continued, even, entire, scarcely discernible, leafy margin at each side, slightly dilated upward, and blunt at the end. The fructification is lateral and solitary, much as in the three preceding; each involucrum flaked, tubular, two-edged, with a broad, orbicular, wavy margin. The column is very long and capillary.

T. rigidum. Rigid Brilie-fern. Swartz Ind. Occ. 1738. Willd. n. 29. R. A. Hedw. Fil. t. 2.—Frond tripoly pinnate; leaflets pinnatifid, with linear, entire, taper-pointed segments. Common flanks two-edged, rigid. Involucrum flaked, lateral, solitary, near the base of the secondary branches. Found about the roots of trees, on the lofty mountains of Jamaica. The creeping root sends up numerous rigid upright fronds, twelve or eighteen inches in height, of which at least one half consists of a brown, shining, round, firm flakt. The leafy part is finely and evenly divided, dark green, peculiarly elatic, and when dry rigid and inflexed. Involucrum urn-shaped, with a membranous spreading border. Column thick, not much protruding.

T. radiatum. Winged Climbing Brilie-fern. Swartz Ind. Occ. 1736. Willd. n. 30. (T. scandens; R. A. Hedw. Fil. t. 6, excluding the synonyms.)—Frond doubly pinnate; leaflets pinnatifid, with linear, cloven, obtuse segments. Common and partial flanks smooth, all winged. Stem climbing, creeping. Found on the mountains of Jamaica, creeping up the trunks of trees to a great extent, the downy rufly-coloured main stem, or root as it might be called, being firmly attached to the bark of the tree, throwing out little radicles as it goes. Fronds fattercd, from nine to twelve inches long, on winged flanks measuring from one to three inches, ovato-lanceolate, twice or thrice pinnate, dark green, smooth, the flanks of all their subdivisions bordered with an entire uninterrupted; wings, leaflets and segments alternate. Involucrum cylindrical or somewhat ovate, slightly winged with a portion of the segment which it terminates; the mouth spreading. Column long and slender. A very different species from the following, for which it has been mistaken by several botanists, to some of whom, though not quoted by Hedwig, we can trace his error.

T. scandens. Great Climbing Brilie-fern. Linn. Sp. Pl. 1562. Willd. n. 31. Swartz Ind. Occ. 1737. (Adiantum scandens ramosissimum, lacinis retusis discifetum; Plum. Fil. 76. t. 93; copied in Petiv. Fil. t. 12. f. 5.)—Frond tripoly pinnate; leaflets oblong, pinnatifid, with linear obtuse segments. Common flanks round; partial winged, hairy. Stem climbing, creeping. Native of mountainous forests in Hispaniola, where it was gathered by Plumer, and since by Dr. Swartz. A much larger plant than the foregoing, creeping over the trunks of old trees. Each frond, two feet high, has a round, not bordered, main flakt, the partial ones only being winged. All the leaflets and their flanks are clothed with long loose hairs, of a shining or golden brown, such as are often likewise observable on the main flakt. The colour of the whole fern is more olive than the last, and its reticulations much coarser. Involucrum much the same, nor do we find the column, when perfect, shorter than one in the other. Sloane's v. 1. t. 58. may be intended for T. scandens, but it is not sufficiently exact to afford any information.

T. tamarififolium. Tamarisk Brilie-fern. Jacq. Coll. v. 3. 285. t. 21. f. 2. Willd. n. 34. Frond doubly pinnate; leaflets lanceolate, pinnatifid, with linear, very narrow, smooth...
*Native ftyle* the Curt. their Compend. Rar. n. 1 T. March 222. tube Involucrwn The 575. yellow T. very The */fl/i Dickf. the 1. Jacq. 265, Willd. Redout. Cor. I. (Ixia (Romulea; 170.) — 265. Angular Bubocodium a 180. Per'ic. Ann. partments. remaining by blage light and herbaceous funnel-diaped valves. The */fl/i winged, ftamens that feparate They Trichomanes, Gen. Eff. to are vrtjAO., and other filament, their segregating the former to be removed in the winter feaon to the protection of the greenhouse, but the latter to remain where planted, or some put into pots, to be placed out in particular situations, as occasion may require. They both form a singular variety when put in affemblage with other different plants of the exotic greenhouse forts, and other kinds in the borders and various compartments.


Gen. Ch. Cal. Sheath inferior, more than half the length of the corolla, of two lanceolate, entire, permanent valves. Cor. of one petal, superior; tube very short, funnel-shaped; limb regular, divided to its vafe bafe in six nearly equal, somewhat spreading, concave segments. Stam. Filaments three, inserted into the mouth of the tube, erect, much shorter than the corolla, downy; anthers rather large, converging, oblong, cloven at the bafe. Fil. Ger. roundish; fyle thread-shaped, erect, longer than the ftamens; ftigmas three, deeply divided, equal, spreading, very flender, rather abrupt. Peric. Capsule roundish, membranous, tumid, of three cells and three valves. Seeds several, globose.


Obv. The shortnefts of the tube, divided ftigmas, and pubefcent ftamens, diftinguish this genus from *Ixia*. (See that article.) The last character is but lightly perceptible, and the others may perhaps hardly be thought sufficient to separate plants fo precisely alike in habit. We shall nevertheless enumerate the species as given by Mr. Ker, late Gawler.

1. T. Bulboeudium. Channel-leaved Trichonema. Ker n. 1. Ait. n. 1. (Ixia Bulboeudium; Linn. Sp. Pl. 51. Willd. Sp. Pl. v. 1. 196. Jacq. Coll. v. 3. 265. Ltc. Kew. v. 1. 271. Curt. Mag. t. 265. Redout. Liliac. t. 88. Sm. Fl. Grce. Sibth. t. 36. Compend. Fl. Brit. ed. 2. 8. Engl. Bot. t. 2549. Dickf. H. Sicc. t. 18. n. 12. Sistirinchenium Theophrasti; Column. Eclipt. 328. t. 327. Crocus vernus; Ger. Em. 153. t. 1, 2.)—Leaves linear, channelled, recurved, longer than the flower-flalk.—Native of grally hillocks, and sandy ground near the sea, in the south of Europe, from Jersey and Guernsey to the Archipelago, in which last country it is very abundant, flowering in March and April. We have no where seen this pretty plant more beautiful, with its numerous varieties, than on the hillocks around the celebrated fountain of Egeria, near Rome. There all the different appearances of the flower, with respect to size and colour, which the above figures represent, and indeed many more, may be collected at once; nor can they fail to convince an observing botaniff that they are no more distinct species, than our red or blue garden anemones. The *ball* is ovate, the size of a filber, with many entire smooth coats. Leaves radical, recurved and widely spreading, narrow, smooth, rufhly. Stalks one or two, combined at the bafe, single-flowered, more or less curved, round, smooth, much shorter than the leaves, though considerabfly elongated after flowering. *Stem* somewhat coloured. *Corolla* from one to two inches long, purplish, pale rofe-coloured with a yellow bafe, or almost white in the border, always varioufly streaked; the backs of the three outer segments greenish; all the segments elliptical, but various in breadth. *Capsule* membranous, corrugated, purplish. We cannot separate Mr. Ker's *rofeum*, for which he cites Curt. Mag. t. 265, however different that figure may, at firft sight, appear.

2. T. cruciatum. Square-leaved Trichonema. Ker n. 3. Curt. Mag. t. 575. Ait. n. 2. (Ixia cruciata; Willd. Sp. Pl. v. 1. 197. Jacq. Kew. v. 290. Bulboeudium pedunculis nudis anfioris, folius bifulbatis linearibus longi- finis; Mill. Lc. 160. t. 240; not 260, as in Hort. Kew. an almost unique error of the kind in the accurate Mr. Dryander, caused by the awkward roman numerals.)—Leaves linear, four-figured, with many deep channels.—Native of the Cape of Good Hope. The *leaves* are more erect than in the former, various in breadth, but always known by their four-figured figure, displayed in a tranverse fiction. The *flalk* is solitary, short and simple. *Corolla* variable in size, pale crinum or purplifh, firecked, externally green; its segments acute and recurved.


4. T. speciosum. Crinum Trichonema. Ker n. 5. (Ixia Bulboeudium var. flore speciosissimo; Andr. Repol. t. 170.)—Leaves linear, channelled, the length of the flalk, which bears a solitary leaf near the top.—Native of the Cape of Good Hope, whence Mr. G. Hibbert received its bulbs in 1800. These flowered in his garden at Clapham the following March. This appears most akin to the firft species in its *leaves*, except their being more erect, and scarcely exceeding the length of the *flalk*. The latter, though simple, bears one leaf near the top, according to Mr. Andrews, who is our only author. We are aware that the European *T. Bulboeudium*, when it has two flowers, bears
bears also a leaf at the junction of their stalks. The flower of the present plant is uncommonly handsome, near two inches long, of a rich crimson; violet at the base; its three outer segments yellowish at the back, with crimson veins. The flower is narrow, green and leafy, less membranous, or coloured, than in most of the rest.

5. T. pudicu m. This is merely mentioned by Mr. Ker, as the *Tilia pudenta* of Dr. Solander in Sir Joseph Banks’s herbarium, without any indication of its character or distinctions.

The able writers from whom we adopt this genus, indicate several European as well as American species, that remain hitherto undefined. Of the latter we have not sufficient materials to judge; but the probability of there being some such cannot be doubted. What we have seen of the European specimens would, however, render us much on our guard against those of exotic origin.

TRICHONUM, in Ancient Geography, a town of Greece, in Etolia.

TRICHOPHORUM, in Botany, from τρίχα, τριχών, a bristle, and φόρος, to bear, because of the bristles encompasing the seed, in allusion to *Eriophorum*, (see that article,) out of which the present genus is extracted. — *Perfoon Ench. v.* i. 69. Pursh 57.—Clas and order, *Triandria Monogynia*. Nat. Ord. Calarumis, Linn. Cyperoides, Luff.

Gen. Ch. Cal. Spike, or Catkin, imbricated every way, with ovate, flat-tipped, pointed, keeled, loose scales, distinguishing the flowers. Cor. none. Stam. Filaments three, capillary; anthers erect, oblong. Pfl. Germen superior, roundish, very small; style thread-shaped, the length of the scale, deciduous; filigree three, elongated, reflexed. Peric. none. Seed solitary, beaked, ovate, triangular, with short to nine capillary, wavy, brown bristles at the base, six times its own length. Receptacle cylindrical, cellular, and toothed.

Eff. Ch. Glumes chaffy, imbricated every way, Corolla none. Style deciduous. Seed triangular, beaked, surmounted at the base with from six to nine hairs, scarcely longer than the spike.

Obf. The difference between this genus and *Eriophorum* consists in the comparatively small number of hairs surmounting the base of the scale, and their much shorter proportion, to say nothing of their brown hue. All these circumstances certainly give the *Trichophorum* a different, and far less brilliant, aspect. It is in fact more akin to various species of *Scirpus*, whose seeds are accompanied by short, flat, rough bristles.


2. T. alpinum. Alpine Hair-sedge. Pursh n. 2. (Eriophorum alpinum; Michaux Boreal.-Amer. v. i. 34.) — Stem naked. Spike solitary.—In bogs on the mountains of Pennsylvania, Vermont, &c. flowering in August. Perennial. Stem triangular, as in the first species, but quite naked. Leaves radical, few, sedgeaceous, channelled. Mi-

chau, Pursh. We have Newfoundland specimens from Mr. Frazer, which answer to these characters. If so, the spike consists of scarcely more than three or four flowers, and the bristles of the seed are about the length of the shining tawny scales.

TRICHOPUS, from τρίχα, τριχών, a hair, and ποὺς, a foot, expressive of the long taper stalk of the capsule.—Gärtn. v. i. 44. t. 14.—Clas and order unknown.

Eff. Ch. Capsule inferior, membranous, with three wings, and three cells, not furrowing. Seeds two in each cell, triangular, deeply notched.

1. T. acuttnicus. Bent of the Cingalese, described by Gärtnner from the collection at Leydon. Capsule ovato, very thin, without valves, each angle extended into a wavy membranous border; each side marked with a longitudinal furrow; partitions from the centre of each valve, very thin; the base running down into a triangular stalk, gradually tapering to a fine capillary extremity. Seeds rusty-coloured, tawny, and deeply notched or lobed. Skin simple. Albumen conformable to the seed, with a longitudinal furrow, hard, cartilaginous, pale. Embryo very minute, in the lowest part of the albumen, monocotyledonous.

Gärtnner observes some affinity between this plant and the *Commodine* tribe, but the inferior capsule appeared to him to denote a very distinct genus, of which he could discover no traces in any author.

We do not perceive why the great length of the stalk was admitted by Gärtnner into the generic character, as the capsule being inferior, renders it a mere flower-stalk. No following botanist has thrown any light on this genus.

TRICHOPUS, in Ichthyology, a new genus of fishes, described by Cepede from the MSS. and drawings of Commeron; the characters of which are, that the body is compressed, and that the ventral fins have an extremely long filament. Cepede has unnecessarily divided these fishes into two distinct genera, calling one "Ophronemus," and the other "Trichopodus." These fishes are natives of the Indian seas and rivers, and are distinguished, one species excepted, by the remarkable length of one ray of the ventral fins, which extends the whole length of the body, or even beyond it.

Species.

GORAMY; Rufescent Trichopus. With a silvery cach on the sides, and the second ray of the ventral fins extremely long; Ophronemus Goramy of Cepede. Native of the fresh waters of China, where it is greatly esteemed as an article of food, and known by the name of "Goramy." It is a prolific species, and easily introduced into new situations; having been imported into Java, and many other of the eastern islands.

ARABICUS; Greenish Trichopus. With violet and blue stripes, and second ray of the ventral fins extremely long; Ophronemus Cal of Cepede, the Labrus Gallus of Linn. Syrt. Nat. Gmel., and the Scarus Gallus of Forst. Arab. See LABRUS GALLUS.

SATYRUS. With shining forehead, projecting chin, and extremely long, single-rayed ventral fins; Trichopus Montanor of Cepede. This fish is known in some countries by the name of "Goramy," or "Gouramy."

PALLASI; Brown Trichopus. With pale undulations; a black spot on each side of the body and tail; and long single-rayed ventral fins. Described by Dr. Pallas as a species of Labrus, and by Kolreuter, in the Petersburg Transactions, as a Sparus. See LABRUS Trichiopurus.

MONODACTYLYUS; Silvery Trichopus. With brownish back; and short, single-rayed, rigid ventral fins; Monodactylus.
TRI

TRICHOSANthes, in Botany, elegantly so called by Linnaeus, from spatha falciforme of Cepede, and described by him under the genus Monodactylus. Shaw's Zoology, vol. iv. pt. 2.

1. T. anguina. Snake Hair-blossom, or Snake Gourd. Linn. Sp. Pl. 1432. Willd. n. 1. Ait. n. 1. Curt. Mag. t. 722. (Anguina fenis, flore albo elegantiissimo, &c.; Mich. Gen. 12. 9. Mill. Ic. 1. 32. Curcubita fenis, fructu longo anguino, &c.; Till. Ic. 49. t. 22.)—Fruit cylindrical, elongated, incurved. Leaves heart-shaped, lobed, wavy, with little pointed teeth.—Native of China and Cochinchina, according to Micheli and Loureiro. A tender annual in our stoves, whose seeds are often imported from the East Indies. The herbage is trailing, luxuriant, and much branched, like the rest of its tribe, with tendrils, and broadish melon-like leaves, whose under surface is finely downy. Flowers in loose long-flattked clusters, conspicuous for their snowy white tubers, and capillary or cobweb-like border, by which, in the warm stillness of a flow, they seem suspended in the air, though the least breath might deflect them. The fruit, three or four feet long, and an inch or two in diameter, of a dark shining green, often marked with white, more or less coiled or undulated, lies on the ground, partly shaded by the leaves, and has the appearance, at first sight, of a large snake. Hence Micheli took his generic name, which is most commodiously, as a specific one, made into an adjective.

2. T. fistulosa. Fetid Hair-blossom. Jacqu. Coll. v. 2. 341. T. cutifera, pointed, furrowed. Leaves oblong-heart-shaped, vilifed, nearly entire. Corolla fringed with simple teeth.—Native of the coast of Guinea. Jacquin says it proved a greenhouse plant with him, flowering in summer in the open air. The root is perennial, tap-shaped. Whole plant viscid and fetid like putrid flesh, or the Stelphania bifurca, which odour adheres to the hands of any person who touches it. Stems one or more, annual, herbaceous, branched, leafy, rising by tendrils to the height of eight feet. Leaves drooping, hairy, talked, from one and a half to three inches long; paler beneath. Flowers small, yellow; their border betet with slightly teeth. Fruit tawny, measuring with its peak an inch and a half. Nothing can less answer to the idea of the original species than the present, nor ought they to rank in the fame genus.

3. T. trichostachya. Rib-leafed Hair-blossom. Linn. Sp. Pl. 1432. Willd. n. 4. (Tata-piri; Rheede Hort. Malab. v. 8. 30. t. 17. Raii Hiltl. v. 3. 337. not 377)—"Fruit ovate, acute. Leaves oblong-heart-shaped, three-ribbed, toothed."—Found about Craganore, on the coast of Malabar, flowering in the rainy season. Stems slender. Leaves paler beneath. Flowers white, with a long entangled fringe. Fruit like a cucumber. A freezing medicine is made of the leaves, with garlic, supposed useful in the epilepsy. The juice of these leaves, mixed with some -kind of oil, is used to anoint the temples of maniacs; to whom also a fumigation, made by a woollen thread dipped into the juice of the leaves and bruised fruit, and then burnt, is thought in India to be beneficial.

4. T. caudata. Beaked Hair-blossom. Willd. n. 6. (T. cutifera; Lamarck Dict. v. 1. 190. Schuru-pada-alam; Rheede Hort. Malab. v. 8. 31. t. 15. Raii Hiltl. v. 3. 337.)—Fruit turbinate-ovate, with an elongated point. Leaves oblong, heart-shaped, three-ribbed, toothed.—Native of the East Indies. Nearly related to the following, but smaller in every part, and the fruit is turbinate, crowned with the tube of the calyx.

5. T. cucumcrina. Cucumber Hair-blossom. Linn. Sp. Pl. 1432. Willd. n. 6. Ait. n. 2. (Pada-alam; Rheede Hort. Malab. v. 8. 30. t. 15. Raii Hiltl. v. 3. 337.)—Fruit ovate, acute. Leaves roundish-heart-shaped, deeply lobed, angular, wavy.—Native of sandy ground among trees, on the Malabar coast, flowering in June and July. Every part is fetid. Root widely spreading, fibrous, annual. Stems herbaceous, angular, hairy, not very harsh. Leaves soft and downy, divided down to the stalk. Flowers white, small, with a long entangled fringe. Fruit yellowish; the seeds lodged in red pulp. Prepared with sugar, this fruit is thought to help digestion, and cure pains of the stomach and bowels, killing worms, promoting expectoration, &c. The juice of the root is purgative and emetic, useful in intermittent fevers.

6. T. amara. Bitter Hair-blossom. Linn. Sp. Pl. 1432. Willd. n. 7. (Colocynthcy flos bofo fimbratiu, fruto ob- lono; Plum. Amer. 86. t. 100. Raii Hiltl. v. 3. 332.)—Fruit oblong-obovate, obtuse. Leaves heart-shaped, minut; rough; dotted beneath.—Gathered by Planter, in the woods of Hipsaniola, flowering in December, and bearing ripe fruit in April. The leaves are remarkably small, hardly an inch and a half in breadth or length, roughish, Gg

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with minute points. Flowers white, as large as in T. anguina, but with a simpler, much shorter fringe. Fruit four or five inches long, and an inch and a half in diameter, contracted at the base; its rind thin, smooth, greenish, variegated; the pulp white and very bitter, with brown seeds.


10. T. tuberosa. Tuberous Hair-blossom. Willd. n. 10. Ait. n. 3. (T. corniculata; Lamarck Dict. v. 1. 191. Anguria frutet parvo, florum segmentis ramulos; Plum. Ec. t. 24.) — Fruit elliptic-oblong. Leaves in three deep lobes; the lateral ones cleft; all entire. — Native of the West Indies. M. Thouin sent it in 1810 to Kew, where it bloomed in the flower about June and July. The root is a huge, globular, perennial, tuberculate, fleshy mass, near a foot in diameter. Stems annual, climbing by simple tendrils. Segments of the leaves lanceolate, diversifoliate, two or three inches long. Flowers somewhat umbellate. Corolla with a longish rather spining fringe at the end of each segment, if we may rely on Burman's copy of Plumier's figure. Willdenow has taken rather an unwarrantable liberty in changing Lamarck's printed names, of this and our fifth species; though in the present instance certainly for the better, the resemblance of horns, in the flower, being probably a deception.

11. T. laciniosa. Jagged Hair-blossom. Willd. n. 11. — "Fruit ovate, acute. Leaves heart-shaped, palmate, with five or seven lobes, toothed, smooth." — Native of the East Indies. Sent by Klein to Willdenow, who describes it with a smooth, slender, angular, climbing stem. Leaves two or three inches long, remotely toothed. Male flowers about six together, in axillary corymbose clusters; with ovate toothed petals; female ones solitary, on axillary flanks; their petals fringed.


Gen. Ch. Cal. Perianth inferior, of one leaf, two-lipped; the upper lip twice the largest, in three equal acute segments; lower in two deep acute segments. Cor. of one petal, ribent; tube very short; upper lip compressed, falcate; lower in three deep segments, the middle one oblong, very small. Stam. Filaments four, capillary, remarkably long, incurved, two rather shorter than the rest; anthers simple. Fl. German four-cleft; style capillary, the length and shape of the filaments; stigma cleft. Peric. none, except the enlarged, inflated, cloved calyx, so reflexed that its upper lip becomes the lower. Seeds four, roundish.


Obs. It is necessary to note, that the above characters, as far as respects the stamens, agree with the specific definition of one of the two Linnaean species only. Linnaeus has left a manuscript fragment, that "Adanson refers this genus to TRICURIUM;" see that article. He certainly does so, in his Familles des Plantes, v. 2. 188, like Dillenius; but in contradistinction to his own just character of the latter, consisting in the want of an upper lip.


Pursh adopts from Walter, Fl. Carol. 164, a variety with linear leaves, called by that writer T. linear.

2. T. brachiatum. Sedge-leaved Trichostema. Linn. Sp. Pl. 584. Willd. n. 2. Ait. n. 2. Pursh n. 2. (Teuricum virginiun, originales; Dill. Virg. ed. 190. t. 283.) — Stamens short, within the flower. Leaves ovato-lanceolate. Flowering branches opposite, panicled. — Native of Virginia, according to Dillenius. Mr. Pursh never saw this species but in the Bankian herbarium, nor have we examined an authentic specimen. The habit of the plant seems much like the last, but the leaves are more fuscous. Dillenius's representation of the parts of the flower, though, doubtless, accurate, but ill agrees with the Linnaean generic description, nor are those parts far unlike those of a Teuricum. The stamens are strongly incurved, or involute, and therefore do not project out of the flower. We suspect this may not be a distinct species from the foregoing. Both require elucidation from American botanists.

3. T. spiral. Spiral Trichostema. Lour. Cochin. 371. (Cay tr&cgrave; me de la Cochinchine.) — "Stamens very long and spiral. Leaves ovate, acute." — Native of Cochinchina. Stem herbaceous, erect, square, four feet high, with opposite crouching branches. Leaves opposite, entire, downy. Flowers pale violet, in long terminal spikes. Corolla ringent, its upper lip falcate. Stamens very long, rolled up spirally, and retained within the corolla. Loureiro. This last character answers exactly to Dillenius's plate of T. brachiatum, to which Loureiro thought his plant nearly akin. Not having, probably, access to that plate, he did not discover how well it agreed, even where he thought the difference greatest.

TRICHOSTOMUM, from Sp. 395, 97, a hair, and 29, the mouth, because the fringe of this moss is remarkable

Eff. Ch. Capsule oblong. Fringe of thirty-two capillary straight teeth, approximated or united in pairs. Trichostomum of Hedwig has, or ought to have, all the teeth of its fringe minutely connected together, at the very bafe, in pairs. The genera which the writer of this articleorldl precluded to reduce to the present, as above indicated, have fruittc teeth, though those teeth nevertheless approach each other in a similar manner. These genera differ among themselves in having separated or united flowers. None can be more naturally akin than they are all, and they have been distinguished by obscure and difficult, as well as unnatural marks. Of this fo good a judge as Mr. Turner could not but be aware, and we are happy in having his concurrence. What is said under the article Dicranum of the general habit of that genus, is in a great measure applicable to this; except a remarkable difference in the aspect and texture of their fringes. This part in Trichostomum, instead of being broad, flat, transversely furrowed, red, with pale points, is long, slender, and of even thickness and colour. The small and unbranched species of the two genera most remarkable each other. The great branched hoary Trichostomum, com-"'

T. papillosum. Papillary Fringe-mofs. FL Brit. n. 5. Engl. Bot. t. 2533. (Bryum papillosum; Dickf. Crypt. fac. t. 11. f. 6.)—Leaves awl-shaped, keeled. Capsule elliptical, nearly erect, gibbous on the lower side at the base. Lid conical. Stem branched.—Found by Mr. Dickson alone, on turfy bogs, in the Highlands of Scotland. The fronds are branched and level-tooped about half an inch high. Leaves dark-green, slender, imbricated every way, entire. Fruit-frisks an inch or inch and half high, terminal, erect, red, with a cylindrical sheath at the base. Capsule red-brown, smooth, with a prominence, like a short spur, at the base, which renders this species very remarkable and distinct, but does not seem to be of the nature of an apophysis. The lid is conical, short. Teeth of the fringe certainly thirty-two.

Sec. 2. Teeth of the fringe connected in pairs at the base. Thirteen Britith species.

T. langimosum. Toothed Hoary Fringe-mofs. Hedw. Sp. Mucf. 109. Crypt. v. 3. 3. t. 2. FL Brit. n. 8. Engl. Bot. t. 1348. (T. ferratum; Ehrh. Crypt. n. 94. Bryum hypnoides; Linn. Sp. Pl. 1384. FL Dan. t. 476. B. hypnoides polycalyx, lanuginosum, montanum; Dill. Mucf. 372. t. 47. f. 32.)—Leaves lanceolate, with a pellucid toothed point. Capsule ovate. Stem procumbent, branched in a pinnate manner. —This, a genuine specimen of the habit of a Trichostomum, is a very common mohs in dry mountainous woods, and on exposed rocks, flines, walls or heaths, bearing capsules, though rarely, in autumn. The copiously branched, arching, clastic, leafy fronds compose large light soft tufts, on which many a tried hunter or botanist has reposèd. The leaves are of a dull yellowish-green, rendered hoary, when dry, by their flat white inferred points, which are curiously bordered with short, broad, abrupt teeth, in a manner unlike every other species, and not ill resembling the cogs of a wheel. Fruit-frisks from the small branches, lateral, solitary, half an inch long, tufted when dry. Capsule erect, brown, smooth, thick and short, with an awl-shaped lid, and a pale reddish fringe. The valve is conical, brown-pointed, splitting up in many different parts, not all at one side.

TRICHOSTOMUM.

nelled, with a pellucid finely ferrated point. Capsule ovate. Stem erect, with very short branches.—One of the most handsome, as well as most rare, of its genus. Dr. Richardson originally sent it to Dillenius from the highest part of Snowdon. Two of our best British cryptogamists, Moffris, Borrer and Hooker, found it in fruitification, in 1808, on the sandy shores of the Tay near Dunkeld. The flms are perennial, two or three inches high, erect, in loose tufts, leafy, subdivided, and furnished moreover with abundance of short spreading branches, which give the plant that resemblance to Erica vulgaris, expressed in the name. Leaves deep green, or tawny, spreading and recurved, revolute, entire, keeled with a deep channel resembling a mid-rib, and tipped with a fine ferrated hair-like point, most visible when dry. Fruit-flasks terminating the last year's shoots, about an inch and a half long, red, finally dark purple, twisted. Capsule erect, smooth, brown. Lid red, awl-shaped, straight, nearly of the same length. Fringe purple, almost as long, straight and slender. Vei fringed with jagged teeth, not splitting.

T. canaliculata. Common Hoary Fringe-moss. Hedw. Sp. Mufc. 111. Crypt. v. 3. 5. t. 5. Fl. Brit. n. 10. Engl. Bot. t. 2534. (Bryum hypnoides; Hedw. 480. B. hypnoides hartifigue canaliculata, vulgare; Dill. Mufc. 358. t. 47. f. 27?)—Leaves ovato-lanceolate, with a central channel, but no nerve, and a pellucid rough point. Capsule ovate. Stem erect, with upright branches.—Very common everywhere, on open, dry, sandy heaths, or moors, both in mountainous and maritime situations, bearing capsules about February or March, but not frequently. The branches are more level-topped and ascending than in the last-described, and the leave of a yellower green, becoming very hoary when dry, in consequence of their white points, rough in every direction. The want of a mid-rib in this species, though there is a furrow appearing like one, has been pointed out as a means of distinguishing it from the rest, especially from T. ericoides. But the same character is found, as we have already described, in that species; while some of Dillenius's specimens of the present, very carefully examined, prove to have an actual rib. These are possibly accidental fragments of another species. The present certainly has no mid-rib, and has its capsule, fringe, and lid accord exactly with ericoides. The latter may be, as Hedwig thought, but a variety of this more common and less elegant kind.

Whether there be any permanent difference in the roughness of the points of their leaves, which affords a clearer distinction in T. lanuginosum, can only be determined by a more minute examination than our materials will admit.

T. fasciculare. Beardle Hoary Fringe-moss. Schrad. Spicil. 61. Fl. Brit. n. 11. Engl. Bot. t. 2005. (B. hypnoides β; Linn. Sp. Pl. 1585. B. hypnoides, hartifigue virescens, fasciculare alpinum; Dill. Mufc. 370. t. 47. f. 28.)—Leaves lanceolate, pointed, revolute, keeled. Capsule ovate-oblong. Stem branched, diffuse.—An inhabitant of dry rocky mountains in the North, bearing plenty of capsules in the spring, whose empty blackened remains continue long. This species approaches several mountain kinds of Dicranum in habit, but is a genuine Trichophyllum. The hoariness of the old plants arises partly from a whitish hue assumed by the leaves in decay, and partly from their lightly pellucid edges; but not from any pellucid or hair-like point, the want of which renders T. fasciculare very distinct from the three foregoing. Its fringe too is much shorter, and the leaves have a mid-rib.

T. glaucifolius. Glauous Fringe-moss. Hedw. Crypt. v. 3. 103. t. 37; B. Fl. Brit. n. 14. Engl. Bot. t. 2581. (Bryum glaucifolius; Dickf. Crypt. falc. 4, 10.)—Leaves linear-lanceolate, acute, rather glaucous. Capsule ovate, slightly furrowed. Stem erect, somewhat branched.—Native of Sweden and Scotland, in which half country Mr. Dickson discovered this pretty and uncommon species, growing in shady rather mountainous situations. We have not heard of it from any other perfon. The flms compone perennial leafy tufts, scarcely half an inch high. Leaves erect, pointlets, rather incurved when dry, of a light-green, slightly glaucous, entire, keeled, with a mid-rib; the upper ones more elongated and tapering. Capsules peculiarly light-coloured and hissing, with a purple fringe, and a conical oblique lid, reddish at the base, half the length of the capsule. The internal cavity of the latter does not reach to the bottom, which, as the thin outer coat of the capsule dries, causes a contraction there, like an apophysis, but of a very different nature. The same appearance is observable in some species of Bryum with club-shaped fruit.

T. lineare. Linear-leaved Fringe-moss. Fl. Brit. n. 17. Engl. Bot. t. 1598. (Bryum lineare; Dickf. Crypt. falc. 3. 6. t. 8. f. 2.)—Leaves linear-lanceolate, imbricated, acute. Capsule elliptical. Lid conical, oblique. Stem erect.—Native of Scotland, Wales, and Northumberland, in wet places, on a calcareous or sandy soil, bearing capsules in the spring. Stems tufted, branched, perennial, an inch or more in height, clothed with dark-green leaves, which vary from an almost linear to an ovate form, and turn either yelowish or blackish, from constant immersion in water, or from its dripping upon them. Fruit-flasks red, an inch long. Capsule ovate, smooth, with a taper lid of its own length. The aspect of this moss, especially when growing in a wet shady place, is much like Dicranum plumulosum, and it has caused some mistakes by that means. Still more perhaps does it resemble a Tortula, (see that article,) but the short flat delicate fringe truly indicates a Trichophyllum. The teeth, standing in pairs, are connected by one common base, according to Mr. Sowerby.


β. Fontinalis alpina; Dickf. Crypt. falc. 2. 2. t. 4. f. 1. (Hypnum nigricans; Villars Dauph. v. 3. 905, B.)—Leaves lanceolate. Capsules ovate, nearly falcate at the ends of the lateral shoots. Stem floating, very much branched.—Native of rivers, in various parts of England, as the Thames at Lambeth, the Isf at Oxford, and the Oufe at Oakley, Bedfordshire. The mountain variety β inhabits the stony beds of the more rapid streams of Scotland, Wales, and the north of England. Both are firmly attached to walls or stones under water, their numerous tufted, branched leafy flms, four or five inches long, floating with the stream. The leave are of a very dark dull olive-green, narrower and almost black in the variety β, loosely imbricated, lanceolate, entire, acute, keeled, with a strong rib; all undulated and twisted when dry. Capsules terminating the lateral branches, foliary, erect, ovate, brown, smooth. Lid half as long, conical, rather curved. Fringe long, tawny or red, its teeth variously connected and pierced at the base, slightly convoluted when dry, soon falling off. The habit of this moss is so little like the rest of its genus, that we cannot but with the character of its fringe were more decidedly sufficient to establish a new one. The specific name moreover, though expressive, is barbarously con-structed.

The
TRI


Some species referred to *Trichosorus* by Hedwig, on account of the approximation of their teeth, we consider as *Grimmia*, because they have only sixteen teeth, not thirty-two. An instance occurs in *G. homonella*, Fl. Brit. 1194. Engl. Bot. t. 1900, to like *heteronella*, which immediately precedes it in these works, that they can hardly be distinguished but by the above minute character. We acknowledge indeed that the dwarf species of *Trichosorus*, in general, have almost entirely the habit of *Grimmia*. But the difference between the numbers sixteen and thirty-two, in their teeth, appears, by the analogy of other genera, a most certain and natural generic distinction. See *Grimmia*.

TRICHOURI, in *Natural History*, a term used by some authors to express such flies as have one or more hairs growing out at their tails: these are called also *fetiscuda*.

TRICHUS, the name of a *ftron* debuffed by the ancients, and said to yield three colours: in their common way of preparing bodies of this kind for medicinal use (which was by rubbing them down upon a pharynx, or other hard stone with water), this first coloured the water black, then red, and lastly white. It seems to have been a kind of hamatites, or blood-stone.

TRICKANDORE, in *Geography*, a town used by *Hindooftan*, in the province of Tinevelly; 30 miles E.S.E. of Palamcott.

TRICKUT, one of the Nicobar islands. N. lat. 8° 3'. E. long. 94° 10'.

TRICLARIA, in *Mythology*, an epithet given to Diana, in Achaia; and Pausanias tells us (In Corint.) that Menalippus and Cometho gratified their luft in the temple of Diana tricharia. This profanation, as it is said, was followed with a general barrenness, infinithe that the earth produced no fruit, and with an epidemical distemper, which swept away thousands of people. The Achaians, having consulted the oracle of Apollo, were answered by the priests, that the infamy of Menalippus and Cometho was the cause of all their calamities, and that the only way to appease the gods was to sacrifice to her every year a boy and a young virgin.

TRICLINUM, in *Antiquity*, the name given by the Romans to the room in which they eat; and also to the bed upon which they reclined at meat, so called, because it was contrived to accommodate three persons.

TRICOCCE, in *Botany*, one of the natural orders among the *Fragments* of Linnaeus, which it ranks as the thirty-eighth, between the *Columneae* and *Siliquosae* (see those articles) though without having scarcely any affinity of characters or qualities with either. The name is derived from *tri*., three, and *xoxo*., a grain, or seed, and alludes to the form of the seed-veil, apparently composed of three combined lobes, each of which comprehends a single-seeded cell. (See *Dicoccus*.) We are not however to understand that every such seed-veil belongs to this order. *Thea* is one exception among severals; while, on the other hand, some genera which do belong to it may have only two lobes to their fruit; witness *Mercurialis*; while *Pluckedia* has four, and *Hura* a much greater number. The valves are generally powerfully elastic, serving by that means to scatter the seeds widely, as soon as they are fully ripe.

The plants composing this natural order have alternate, mostly simple, leaves, often furnished with glands. Their seereted fluids are milky, and extremely acrid, their milk being a natural emulsion, of a most virulent reinf, or gum-resin, mixed with a watery liquid. The *calyx* and *corolla* have, as Linnaeus observes, always something unusual in their conformation, especially about the *necurry*. The *flame* is generally peculiar, being three-cleft, sometimes very deeply, and each branch again divided. Many of the genera have separated, either monocious or dioecious, flowers. The *flame* are either shrubby, sometimes very fleshy; or herbaceous, with annual or perennial roots.

*Euphorbia* is selected by Linnaeus to exemplify the order of *Tricocce*. No genus can be more natural or distinct, however different the habit, or herbage, of some of the numerous species from each other. According to the generally received idea of this genus, its *flowers* are simple or united, each having a *calyx* of one concave or inflated leaf, whose four or five marginal teeth bear as many abrupt, coloured, nectariferous glands. These latter, in some instances, as *E. corollata*, assume perfectly the appearance of petals. Yet Linnaeus was always much puzzled and surprized at the petals thus originating from the teeth of the *calyx*, of which he could scarcely find another example. Other peculiarities in this remarkable genus could not escape to accure an observer, as the long *stalk* which elevates the *flame* out of the flower, and turns it to one side; and the progressive nature of the *flame*, as well as their anthers, which come forth in succession. The herbage too is remarkably various, arboreous and succulent, or herbaceous; spinous or unarmed; the leaves opposite, or alternate, or deficient. Two species having an irregular *calyx*, gibbous underneath, were separated into a distinct genus by Dillenius, under the name of *Tithymaloides*, but they are too naturally akin to the rest to justify such a measure.

Although the above is the generally received idea of *Euphorbia*, Julliena, Gen. Pl. 386, has hinted that the flower is perhaps a compound one, consisting of a central female flower, with many monocious male ones, distinguished by chaffy scales, all in one common involucrum. Mr. Brown, in his very instructive Remarks on the Botany of Terra Aultralis, published at the end of captain Flinders's Voyage, has confirmed this opinion, by an additional observation. He conceives what all authors have taken for a joint in each filament, to be in fact the separation of the filament from its *footstalk*; or in other words the bale, or receptacle, of the flower, or *flame*, which is entirely detached from a proper perianth and corolla; the female flower likewise having its *footstalk*, on whose dilated, sometimes obscurely lobed, fummit, the spheric germen is placed. In support of this doctrine, it is sugggested that the real filament is, as in other plants, produced infrequent to the formation of its anther, and of the *footstalk* below the joint; their surfaces moreover, in some species, being different in nature. But the most conclusive certainty is given to Mr. Brown's theory, by the discovery of a new genus, hitherto unpublished, having an involucrum nearly similar to *Euphorbia*, including several *fifliciul* of monocious male flowers, around a solitary female; while in this there is an obvious perianth, regularly divided into lobes, at the joint of each supposed filament, as well as at that by which the germen is connected with its *footstalk*.

The above idea of *Euphorbia* as a monocious genus, brings it nearer to the rest of this natural order, which have almost universally separated, either monocious or dioecious, flowers. At least such is the case with the genera properly belonging to it, and which constitute Julliena's order of *Euphorbia*, or *Euphorbiaceae*.

TRICOLONI, in *Ancient Geography*, a people of Gallia Narbonensis, whose capital was Alarante; who occupied the territory of Siferon.

TRICOLONI, or *Tricolons*, a town of Arcadia, N.E.
N.E. of Megalopolis. Here was a temple of Neptune, near it a sacred wood, and at a small distance a temple of Diana, renowned Calila.

TRICOMIA, a town of Asia, in Phrygia Major.

TRICOR, a name by which some of the chemical writers have called gold.

TRICORD, an ancient musical instrument with three strings. The first lyre of Mercury is supposed by many to have had but three strings. Most of the writers on music among the ancients, have supposed that the three sounds of this primitive lyre, were E, F, G.

Julius Pollux called the pandora, or pandura, the instrument with three strings.

The emperor Heliogabalus, says Lampridius, sung, danced, recited, or declaimed to the sound of the flute, founded the trumpet, played on the pandura and the organ.

Here is work for ingenious conjectures: what was meant by reciting to the flute? What music could an instrument without a neck produce with only three strings? And what kind of instrument was the organ upon which Heliogabalus played, before organs were supposed to have been invented?

TRICORII, in Ancient Geography, a people of Gallia Narbonnensis, mentioned by Lucan in his Pharsalia, and also by Livy and Polybius, in their account of the march of Hannibal. Livy says that Hannibal, having passed the Rhone, took his route on the left, through the country of the Tricarii, and touching on the territory of the Vecontii, entered into that of the Tricorii. Ascending along the Rhone, he arrived on the fourth day of his march at the junction of a river with the Rhone, on the confines of the Allobroges, who inhabited the territory between these rivers. This river is called Scoras by Polybius, and Arar (the Saone) by Livy. Some critics, however, are of opinion that this name is erroneous, and that it was Iare.

TRICORNIS, in Anatomy, an epithet applied to the lateral ventricle of the brain. See Brain.

TRICORYNE, in Botany, from τρίκορυς, three, and κορυς, a club, expressive of the three club-shaped seed-vessels.


This genus ranges naturally between <em>Anthericum</em> and Mr. Brown's <em>Caps</em>. The species are herbaceous, with fibrous, moily perennial, roots. Leaves grasy, narrow. Branches, if any, accompanied by an interior <em>flabellum</em> (or bracteal). Flowers umbellate, erect, yellow, their partial flanks having a point at the summit. Corolla twisted as it fades, and soon falling. Seed-vessels resembling coated nuts, one of them sometimes abortive, but rarely more than one.

1. <em>T. simpliciflorus</em>.—Stem undivided. Leaves flat, roughish at the edges. Umbel solitary, of from ten to fifteen flowers. Partial flanks thrice as long as the involucre.

Oberved by Mr. Brown at Port Jackson, New South Wales.

2. <em>T. elator</em>.—Stem round, smooth, leafy; branches smooth, panicled, angular and frilled. Leaves flat. Umbels of from five to seven flowers. Native of the same country.

3. <em>T. frabræ</em>.—Stem round, hitpid, leafy. Branches panicled, angular and frilled, rough. Leaves flat, minutely toothed. Umbels of from five to seven flowers.

Native of the tropical part of New Holland.

4. <em>T. tenella</em>.—Stem slender, round, forked, smooth, leafy, scaly. Umbels of two or three flowers. Found by Mr. Brown on the south coast of New Holland.


Gathered by Mr. Joseph Banks, in the tropical part of New Holland, and seen only in his herbarium by Mr. Brown.

TRICOT, in Geography, a town of France, in the department of the Oise; 13 miles N.W. of Compiègne.

TRICRANA, in Ancient Geography, an island situated on the coast and to the S.E. of the peninsula of the Argolid, having to the S. the island Arikera, to the N.W. that of Hydra, and to the N. the promontory of Aca. Pauflanias mentions this island.

TRICRATUS, in Botany, so named by the late M. l'Heritier, from τρίκρατος, three, and κορος, power, or diificlion; perhaps in allusion to the three-fold affinity or resemblance of the plant, indicated by Jussieu, who remarks that it has the habit of <em>Valeriana</em>, the flowers of <em>Primula</em>, and nearly the character of <em>Mirabilis</em>. We still do not perceive any reason for Jussieu's original name, <em>Abonia</em>, (from aβοις, pretty and delicate,) being superseded by the above.—L'Hérit. Monogr. with a plate. Willd. Sp. Pl. v. 1. 807. (Abonia; Juss. Gen. 448. Lamarck Illufr. 468. t. 105.)—Clæs and order, <em>Pentandria Monogynia</em>. Nat. Ord. Aggragata, Linn. Nyfagynæ, Juss.

Gen. Ch. Cal. Perianth none. Car. of one petal, inferior; tube funnel-shaped, inflated at the base, then suddenly contracted; limb shorter than the tube, flat, equal, in five deep, inversely heart-shaped segments. Nectary cup-shaped, of one leaf, encompassing the germen, and united with the inflated base of the tube. Stam. Filaments five, thread-shaped, unequal, shorter than the tube, to which they are united in their lower part, and inserted into the nectary; anthers oblong, within the tube. Pfll. Germen superior, roundish, embraced underneath by the nectary; style one, thread-shaped; stigma undivided. Peric. none. Secc. Nut elliptic-oblong, pointed at each end, five-angled, invested with the hardened base of the corolla, of one cell.


1. <em>T. admirable</em>.—L'Herit. as above. Wild. n. 1. (Abonia umbellata; Lamarck Illufr. 459. t. 105.)—Native of the sea-coast of California, where its seeds were collected by M. Colignon, a gardener who was sent out with La Peyrouse. These produced flowering plants in the Paris garden in 1788. The <em>herbage</em> is delicate, with several branches spreading on the ground; whether perennial or annual is not mentioned. Leaves simple, opposite, ovate, entire, on long flanks. Flowers in axillary, long-flanked heads, with an ovate <em>bractea</em> under each flower. <em>Tubus</em> green. <em>Limb</em> of an elegant rose-colour. This little plant is perhaps the only fruit of La Peyrouse's unfortunate expedition.

TRICRENA, or <em>Tricrena</em>, in Ancient Geography, the name of three fountains, a place of Peloponnesus, in Arcadia, E. of Pheneos.

TRICUSPID, in Anatomy, three-pointed, one of the valves of the heart, placed at the right auriculo-ventricular aperture. See Heart.

TRIDACNAE, in Natural History, a genus of bivalve shells.
TRI

TRIDACTYLIA, in Ornithology, a genus of birds, separated by Dr. Shaw from Picus, on account of the number of toes; this having but three, whereas the genuine Picus are all furnished with four. Its generic characters are; beak many-sided, straight, wedge-shaped at the tip; nostrils covered with fetacous recumbent feathers; and feet with only three toes, placed two before and one behind. The species are the following.

HIRSUTA. Downy, varied with black and white. See Picus Tridactylus.

UNDULATA. Waved, varied with black and white, beneath white. The southern three-toed woodpecker of Latham. First described by Brincon, and by him said to inhabit Cayenne.

TRIDAX, in Botany, from τρίος, three, and δακτυλος, to list, or wound, because of the three deep divisions of its marginal florets. Such is the explanation of De Theis, and it seems consonant with the meaning of Linnæus; yet the latter in his Philosophia Botanica enumerates this word, which he considers as synonymous with ἱδρος, letter, among the old Greek names incapable of explanation. Possibly he had forgotten his original idea, between the writing of his Hortus Cliffonianus and the Philosophia; especially as he had not seen the plant. Phly. speaks of Ofiera iridacea, a kind of oyster, so called because one of them was large enough for three bites, or mouthfuls.—Linn. Gen. 435. Schreb. 568. Willd. Sp. Pl. v. 2214. Mart. Mill. Dict. v. 4. Jull. 190. Gerta. v. 2. 451. No figure.—Clas. and order, Syngenesia Polygonia-superfusa. Nat. Ord. Compositae opposifolius, Linn. Caryophylles, Jull.

Gen. Ch. Common Calyx cylindrical, imbricated, with ovate-oblong, sharp, upright scales. Cor. compound, radiant. Florets of the diusk all perfect, tubular, funnel-shaped, erect, five-toothed; those of the radius female, ligulate, in three deep segments of equal length; the middle one narrowest. Stam. in the perfect florets, Filaments five, capillary, very short; anthers united into a cylindrical tube. Pfit. in the perfect florets, German oblong; style bristle-shaped, the length of the stamens; stigma obtuse; in the female ones, German oblong; style thread-shaped, the length of the corolla; stigma obtuse. Peric. none, except the permanent calyx. Seeds, in both kinds of florets, solitary, oblong. Down simple, rather longer than the calyx. Recept. flat, clothed with lanceolate, shaggy scales, shorter than the seeds.


1. T. procumbens. Procumbent Tridax. Linn. Sp. Pl. 1268. Willd. n. 1. Mill. Dict. ed. 8. (Tridax; Linn. Hort. Cliff. 418. After americana procumbens, foliis laminatis et hiutilibus; Houftouan's MSS.)—Gathered at Vera Cruz by Dr. Houftouan, who sent seeds to Miller. The latter cultivated this plant, in his bark-floe at Chelsea, but it flowered sparingly, and seldom perfected seed. He sent a dried specimen to Clifford, which Linnæus described, but there is none preferred in the Linnæan collection, nor has any figure of the Tridax ever appeared. It seems to be herbaceous and perennial, propagating itself by the trailing flacks, which throw out roots, and are hairy, clothed with opposite, nearly sessile, rough, hairy, ovate leaves, an inch and half long, acute at each end, sharply fertilized, their lower and largest feratrices, which are about the middle of the leaf, making a fort of angle at each side. Flowers flacks long, naked, simple, at first terminal, but afterwards becoming lateral. Flowers solitary, erect, palmatus, or white; Linnæus erroneously supposed the radius to be yellow.

TRIDE, in the Mange, signifies short and swift; thus a tride pace, is a going of short and quick motions, though united and easy. A tride career is a very fast gallop, with the times or motion short and nimble; and so of other motions. Some apply the word only to the motion of the haunters.

TRIDENT, a kind of sceptre, which the painters and poets put into the hands of that god. It is in form of a spear, or fork with three prongs, whence the word.

The poets tell us, that Neptune makes the earth open whenever he strikes it with his trident.

Mythologists give several reasons for affixing to Neptune the trident. Some say that it was designed to denote by its three points, the quality of the three forts of waters that are upon the earth; one of the sea, which are salt; those of the fountains, that are sweet; and those of the ponds, that partake of both these qualities. Others say, that it alludes to Neptune's threefold power over the sea, which he troubles, allivages, and prefers. But without hunting after myurities, it is sufficient to allow, that the trident was a kind of sceptre used by ancient kings.

TRIDENT, among Mathemonantians, is used for a kind of parabola, by which Defartes constructed equations of six dimensions.


Female, at the base of the same spike, Cal. Perianth inferior, of the structure of the male. Cor. none. Pfit. German superior, roundish; styles from fifteen to twenty, thread-shaped, longer than the stamens, collected into three bundles; stigmas thickish. Peric. Capsule roundish, brizy, of three cells and three valves. Seeds solitary, angular at the inner side, gibbous externally.


Female, Calyx of five leaves. Corolla none. Styles numerous, in three bundles. Capsule of three cells, with solitary seeds.


We cannot precisely reduce these plants to any known genus,
genus, and yet it is very probable they may be already de-
dered among the numerous species of Creton, which Jussieu
justly calls genus recognoscendum, as requiring perhaps to be
divided, or better defined.

TRIE, in Geography, a town of France, in the depart-
ment of the Upper Pyrenees; 13 miles E.N.E. of Tarbe.

TRIELe Chateau, a town of France, in the depart-
ment of the Oise; 3 miles W.N.W. of Chaumont.

TRIEBEL, a town of Lower Lusatia, in the circle of
Guben; 12 miles W. of Sorau. N. lat. 57° 36'. E. long.
14° 51'.—Alfo, a town of Saxony, in the Vogtland; 3 miles S.S.W. of Oelsnitz.

TRIEESCHEBACH, a river of Saxony, which runs
into the Elbe, near Meifen.

TRIEDROSTYLA, derived from τρί-, trice, ὀκτά-, a
side, and στυλος, a column, in Natural History, the name of a
genus of spars.

The bodies of this genus are spars, in form of trigonal
columns, adhering by one end to some solid body, and ter-
ninated at the other by a trigonal pyramid. Of this genus
there are four known species. Hill.

TRIEL, in Geography, a town of France, in the depart-
ment of the Seine and Oise; 6 miles N. of St. Ger-
main.

TRIELEN, a small island in the English Channel, near
the coast of France. N. lat. 48° 23'. W. long. 4° 50'.

TRIEMERUS, the three-day fly, in Natural History, a
fly somewhat like the butterfly; it has four large yellowish
wings, and a long body, with a head furnished with long
antennae, large eyes, and a spiral trunk. It is found among
the nettles and mallows.

TRIEMINERIS, τριεμινερις, feminernaria, a kind of
caulis in Latin verse, in which, after the first foot of the
verse, there remains an odd syllable, which helps to make
up the next foot.

As in, Ille latus niveum mollis fulsus hyacintho.

TRIENACH, in Geography, a bay of the county of
Donegal, Ireland, on the west coast. N. lat. 54° 53'.
W. long. 8° 17'.

TRIENIAL, an epithet applied chiefly to offices or
employments which last for three years.

Thus we say, a triennial government; most regular ma-
nifctories have triennial superiors; that is, they elect new
ones at the end of each three years.

In 1695, an act was made for triennial parliaments, i.e.
for parliaments which should be dissolved, and the members
be elected anew, every three years. Till that time, the king
had it in his power to prorogue and continue his parliaments
as long as he pleased. This opened a door to corruption,
which the triennial bill was intended to prevent.

The triennial act had, from other views, been since
repealed; for the great struggles usual at elections, the great
ferment it usually put the nation into, the great expenses
upon that occasion, with other considerations, determined
the legislature, in 1717, to change triennial parliaments for
frequently ones. See Dissolution of Parliament.

TRIENS, in Antiquity, a copper money, of the value of
one-third of an as, which on one side bore a Janus's head,
and on the other a water-rat.

This was the piece of money used to be put in the
mouths of the deceased, to pay Charon his fare for their
passage into another world.

TRIENS, or Triental, was also used for a drinking cup;
and that which was ordinarily used. It contained four
cyathis.

TRIENTALIS, in Botany, from triens, the third part of
any thing, usually of a foot measure. A name borrowed
by Linnaeus from John Bauhin, who calls this pretty little
plant Herba trisialis, alluding to its humble stature.—Linn.

275. Gartn. t. 50.—Clas and order, Heptandria Mono-

Gen. Ch. reformed. Col. Perianth inferior, of about seven
linear-lanceolate, pointed, spreading, permanent leaves. Cor.
of one petal, flat-shaped, flat, in seven deep, ovato-lanceolate
segments, alternate with the calyx, very slightly connected.
Stam. Filaments seven, capillary, inserted into the base
of each segment, spreading, the length of the calyx; anthers
simple, recurved. Pist. Germen superior, globose; style
thread-shaped, equal in length to the stamens; stigma capi-
tate. Peric. Capsule ovate, of one cell, and as many ovate,
rigid, cartilaginous, thick-edged valves as there are calyx
leaves, and opposite to them, highly polished internally.
Seeds several, nearly orbicular, convex externally, angular
within, blackish, dotted, each enveloped in a snow-white,
finely reticulated, combined, membrane tunics. Recept.
central, globose, very large, with a cavity for each seed.

Eff. Ch. Calyx of seven leaves. Corolla in seven deep
equal segments, flat. Capsule of one cell, and many valves.
Seeds in a reticulated tunic.

Obf. Linnaeus remarks that feven is the most usual number
in the parts of fructification, though sometimes liable to vary.
He adds, that the fruit is a dry berry, not burrowing with
valves like a capsule. So Gærtner likewise contains this;
and as botanists have rarely seen it, they have, like
ourselves, adopted the opinions and descriptions of the
great writers. Yet nothing is more certain, if we may be
move our eyes, than that the fruit of Trientalis from Scot-
tland, is, as above described, a capsule with rigid spreading
valves, probably soon breaking off from the base, and
leaving a brittle, dry, globular mass of seeds, rolling around
their receptacle, and enveloped in a most elegant white net-
work, originally perhaps pulpy, which has been taken for
the membranous coat of a dry berry. At first we were in-
clined to suppose the valves of the capsule might be a per-
manent hardened corolla, but their being opposite to the
calyx soon decided that point. It is high time for us to
correct this, too long neglected, error.

trisialis; Bauh. Hist. v. 3. 536. Pyrola alines flore ma-
jor; Bauh. Prod. 100; copied in Morison, fæt. 12. t. 10.
f. 6.)—Leaves elliptical.—Native of tufted heaths, or of
woods on the sides of hills, in Scotland and the northern
countries of Europe, as well as some parts of the north of
England, flowering in May and June. The perennial root
is girtly tuberos, with many long whitish fibres. Stem
solitary, simple, erect, four or five inches high, almost
naked, except at the top, where it is crowned with a tuft of
nearly sessile, bright green, smooth, entire leaves, delicately
veined, an inch and half or two inches long; tapering at
the base; more or less blunted at the extremity. Among
them are several axillary, capillary flabell, about the same
length, each bearing a very pretty and delicate white flower,
with yellowish, or pale pink, anther and stigma. Linnaeus
was particularly fond of this plant, and has celebrated its
"fascinating beauty" in his elegant and eloquent Flora
Lapponica.


Pursh
TRI

Purh n. 2. (T. europa; Michaux Boreal.-Amer. v. 1. 220.)—Leaves lanceolate, tapering at each end.—In cedar swamps, and other places, among bog-mofs, on high mountains, from Canada to Virginia, perennial, flowering in July and August, and differing considerably from the European species. Purh. We have this from Newfoundland, as well as from the garden of the late right honourable Charles Greville, at Paddington. The leaves are narrower, more lanceolate, and tapering at each end, but we can discover no difference in the flowers, nor any other part besides. Both kinds bloom at the same time in our gardens.

TRIERARCHI, τίμωποι, among the Athenians, commissioners chosen annually out of the richest citizens, who are obliged to provide all sorts of necessaries for the fleet, and to build ships at their own charge. See Potter, Archcel. Grec. lib. i. c. 15, tom. i. p. 86.

TRIERES, or TRIERI, in Ancient Geography, a town of Syria, burnt by Antiochus.

TRIERON, a promontory of Africa Propria, at the extremity of the Lefler Syrtes. Ptolemy.

TRIERS, in Laws. See TIRIONS.

TRIERTY, in Geography, a small lake of the county of Donegal, Ireland, near the borders of the county of Fermagham.

TRIESING, a river of Aultria, which runs into the Danube, 3 miles N.W. of Fischamund.

TRIESTE, a sea-port town of the duchy of Carniola, situated in the Adriatic, at the north-east part of what is called the Gulf of Trieste. The houses here stand on the front of a mountain, extending themselves quite to the sea, and on top of the mountain is a castle. The harbour confines of the inner and outer. The emperors-queen, Maria Therfia, caused it to be considerably improved and fortified, and also declared it a free port, imparting to it all the requisite immunities and privileges, whence all sorts of wares, both by water and land, in and out of the time of fair, may be imported here, free from any duties and taxes; but from this immunity, iron, steel, copper, quicksilver, salt, gunpowder, mirrors, and crystal, are excepted. By these means many ships and vessels are induced to arrive there, which at this place unladen their goods, and take others on board, which are conveyed from hence by land-carriage out of the hereditary lands belonging to the house of Aultria, and also out of Germany. A wall, fortified with a bastion, serves as for the defence of the harbour against any hostile attempt, as for fencing it against the wind, and also for the security of the shipping. On the north-west side of the town, where formerly were salt-pits, a beautiful suburb has been erected, and thereby the bad air, which formerly arose from these salt-pits, meliorated: but full at the time of flood, which often rises here four or five feet in height, a fench is perceived, the sea at this place having a boggy ground. The water also of a fresh spring has been conducted by pipes from the distance of two Italian miles to the town. These and other improvements and good regulations, have in view the increase of the trade of the place. Triefe is likewise the see of a bishop, who is suffragan to the archbishop of Goritz, and bears the title of the count of Triefe. In its cathedral too are twelve canons. The sovereign captain, who governs the town and its territories, resides in the castle. Lotharius, king of Italy, made a donation of this town and circumjacent country, together with the right of mintage, to John, at that time bishop of the place; but bishop John II. def Wopped of the jurisdiction over it to the community of Triefe for 500 marks. Afterwards it was incorporated with the duchy of Carniola, but again dismembered. In 1795, this place was taken by the French. The number of fixed in-habitants is estimated at 30,000, without including fees-faring people and strangers; 74 miles S.S.W. of Vienna. N. lat. 45° 53'. E. long. 13° 55'.

TRIESTE. See TRIESTE.

TRIESTY, mountains in the north-western part of the county of Mayo, Ireland, near the Mullet, and immediately north of Tullaghon bay.

TRIETERIA, in Antiquity, recalls which the Brotians and Thracians held every three years in honour of Bacchus, and in remembrance of his expedition into India, which lasted three years.

TRIETERIS, τριήτερος, in the Ancient Chronology, a cycle of three years.

Thales, it is said, observing that the lunar revolution never exceeded thirty days, appointed twelve months of thirty days each; so that the year consisted of three hundred and fifty days: and in order to reduce these months to an agreement with the revolution of the sun, he intercalated thirty days at the end of every two years, whence that space of time was called a period of three; because the intercalation was not made till after the expiration of full two years, though really it was only a period of two years; as we are informed by Cen- ferinus, De Die Natali, cap. 18.

TRIEWALD, Martin, in Biography, an eminent mathematician and engineer, was born at Stockholm in 1691, and being intended for trade, he travelled to England for information and improvement on subjects that concerned his commercial pursuits. Disappointed in prospects of this kind, he changed his object; and was fortunately engaged by the proprietor of some coal-mines near Newcastle to superintend the machinery of his works. This situation corresponded to his genius and inclination; and he was thus led to pay particular attention to mechanism, both in theory and practice. In 1726 he returned, after an absence of ten years, to his native country, where he constructed a steam-engine, and read lectures in philosophy, illustrated by a course of experiments, similar to those of Desfagniers, which he had attended in London. He thus attracted the notice of the king and of the States, who conferred upon him a pension, with the title of director of machinery. He also proposed some improvements in the manufacture of iron and steel. Thus diligently and actively employed for the benefit of his country, he received a commission as captain of engineers and inspector of fortifications; and he invented various machines connected with those offices, models of which are preferred in the Academy of Sciences at Stockholm and also in the Academy of Lund. Diving was also an object of his attention, and on this subject he wrote a treatise, entitled "Of the use of Water, or the Art of living under Water," Stockholm, 1741, 4to. (See DIVING-BELL.) For this invention he received honorary rewards both from his own sovereign and the king of France. In 1729 he was elected a member of the Society of Upsal; and the same honour was conferred upon him by the Royal Society of London and other learned bodies. Triewald died suddenly in 1747. He communicated various papers to the Academy of Sciences at Stockholm, which appear in its Memoirs for the years 1739, 1740, and 1747. Beckman's Hist. of Inventions. Desfagniers' Philos. Gen. Biog.

TRIEXAHEDRIA, formed of τρίς, thrice, καὶ, and σατρ, a side, in Natural History, the name of a genus of fisps.

The bodies of this genus are perfect and pellucid crystal-like spars consisting of thrice five plane sides, being composed of an hexagonal column, terminated at each end by an hexagonal pyramid; of this genus there are three known species. Hill.

H H TRIFAL-
TRIFALTIGKERT, in Geography, a town of Prussia, in Natangia; 16 miles S.S.E. of Königberg.

TRIFAX, among the Romans, a javelin three cubits long, which was thrown by the cataphuta.

TRIFELS, in Geography, a citadel of France, in the department of Mont Tonnerre. Here Richard I., king of England, was kept, when he appeared before the diet of Worms; 1 mile S.E. of Anweiler.

TRIFOLIASTRUM, in Botany, Brachard Trefoil, a name given by Micheli, Nov. Gen. Pl. 26. t. 25, to such species of Trifolium as have their legume projecting beyond the calyx, which he, on that account, separates from thence. Neither the character, nor the name, has met with the favour of following writers. See TRIFOLIUM.


Gen. Ch. Cal. Perianth inferior, of one leaf, tubular, five-toothed, permanent. Cor. papilionaceous, with long claws, mollily permanent, withering; standard reflexed; wings shorter than the standard; keel of one petal, shorter than the wings. Stam. Filaments two, distinct, one simple, one in nine segments; anthers simple, roundish. Pip. Germen oblong-ovate; styleawl-shaped, ascending; stigma simple, smooth. Petals. Legume short, of one valve, and one cell, not burfting, scarcely exceeding the calyx in length, deciduous. Seeds one to four, roundish.


All botanists have perceived the difficulty of defining the technical characters of this genus, and yet none can be, in itself, more natural. Linnaeus reckoned it the most difficult in the whole vegetable kingdom to discriminate by any essential mark. He comprehends under Trifolium, as may be seen above, various other genera of good systematic writers, differenting among themselves as follows. Melliotus of Tournesort and Julliac, has a legume longer than the calyx, with loosely spikéd flowers; Trifoliatum of Micheli, a legume longer than the calyx, with capitate flowers; Lupinatif of Buschman, a legume with several freads, and five leaflets in each leaf: Lupulinum of Rivinus, a permanent corolla, whose standard is inflexed and flattish, ribbed or plaited: Logopus of the fame author, a flabby calyx, equal in length to the corolla; and finally Triphyloides of Pointedera, has a monopetalous corolla, the standard wings and keel being all united into one tube; which is likewise the case with a great many more species than this author, or Linnaeus, has indicated.

Linnaeus admitted the inflorescence as a part of his natural, and even his essential, character of this genus, defining it "a little umbel or head." He was always very unwilling to adopt this measure, and we presume to think he has, in no cafe, referred to it with advantage. In the present it is neither correct nor determinative, scarcely any species being really umbellate, and though many are capitated, as many are spikeled, while several are racemose. We have therefore followed the example of Jussieu, who in this instance wisely lays aside the inflorescence; attempting a more full and explicit character from the parts of fructification themselves.

In natural affinity the present genus comes nearest to Trigonella, which will presently follow in alphabetical order. Some of the Mellioti especially, closely accord therewith, both in characters, habit, and qualities, particularly in an appropriate scent, allied to that of new hay and bitter almonds, most powerful, and very permanent, in the dried herbage. Some compare it to the smell of a pig-fly. The Blue Mellilot, and Common Fenugreek, poife this odour in the greatfet perfection.

Trifolium is a very extensive genus. Linnaeus has forty-six species in the fourteenth edition of his Systema Vegetabilium; Willdenow has seventy-two in his Sp. Pl. — Eighteen are natives of Britain. Fifty-five are enumerated by Mr. Aiton in his Hortus Kewensis. We have three to add from the Prodr. Fl. Græc., two or three American ones of Mr. Pursh, and a few from other sources. It is necessary to take a view of the whole, partly for their more correct botanical distinction, though in general they are better defined than the species of most, equally extensive and natural, genera. A correct knowledge of these plants is supremely important to the agriculturist; because the qualities of some, very near in external appearance, differ widely in utility; and because there are many, hitherto little observed, which promise to be as valuable as any of the rest. Some of these are known and cultivated in other countries, and others may be well worthy of trial. Unless they are first accurately distinguished, nothing respecting them can either be perfectly understood, or clearly communicated.

The species are distributed into five very natural sections, and are all herbaceous. Some in each section are annual, others perennial. The frens are branched. Leaves alternate, more or less flaked, of three, molybly obovate, and equal, toothed or entire, rarely linear, leaflets, with a pair of membraneous ribbed stipules united to the base of the foot-stalk. Inflorescence terminal or lateral, generally flaked, either tufted, capitated, spikéd or racemose. Flowers red, purplish, white or yellow; sometimes, though rarely, fragrant.

Sect. 1. Malolist. Legumes projecting beyond the calyx; with several seeds. Flowers racemose.

1. T. cornaceum. Blue Mellilot Trefoil. Linn. Sp. Pl. 1977. Willd. n. 1. Ait. n. 1. Bieb. Cuff. 1860. T. odaizatam; Gen. Em. 1195. Melliotus carus; Rivin. Tetr. Irr. t. 9. Lotus sylvanis; Camer. Epit. 894; not 721, as in Willd. and Ait. after Linn. The latter being T. arvense. A good coloured figure is wanting.)—Clusus roundish-ovate, long-flaked. Legumes half-naked, beaked, with flight longitudinal ribs, and two seeds. Stem erect. Stipulas entire.—Native of Bohemia, Tauria, Germany, &c. in dry barren ground, flowering in summer. Cultivated in our gardens, for curiosity, ever since the time of Turner, Gerarde, &c. The root is annual, fibrous. Stem two or three feet high, smooth, angular, leafy, scarcely branched. Leaflets pal, elliptical, toothed, an inch long, smooth; the odd one flaked. Flowers pale, blue, in numerous, solitary, long-flaked, axillary heads, all the way up the stem. The whole plant, either fresh or dried, has a sweet liquorice-like scent, lasting...
TRIFOLIUM.

a great number of years, and perfuming every thing near it.

2. T. indicum. Indian Melilot Trefoil. Linn. Sp. Pl. 1077. Willd. n. 2. Ait. n. 2. (Melilotus lutea Indice orientalis erecta, foliculis rotundatis parvis, picis floreum ex folioauris alis multiplicatis; Pluk. Phyt. t. 45. f. 4.)—Clutters cylindrical. Legumes naked, strongly reticulated, single-fed, obtuse. Stem erect. Stipulas nearly entire. —Native of the East Indies. Cultivated at Oxford before 1689. Annual, flowering in summer. Smaller and more slender than the foregoing, with long slender clusters of small, yellow, drooping flowers. The leaflets also are smaller and narrower. Legumes not much bigger than mustard-feed, turgid, pale, roundish-elliptical, strongly corrogated, with a fort of elevated net-work, and tipped with the capillary style, not properly beaked. Such is the Linungan plant, which does not agree with Willdenow's definition. We cannot answer for the varieties enumerated in Sp. Pl. Some are said to have white flowers. The yellow lades greatly in what we have examined, before the corolla falls. Willdenow has in his Enumeratio, 789, distinguished the $\beta$, which is Pluknet's t. 45. f. 5, as a species by the name of Melilotus rugofolus.

3. T. mellifieae. Sicilian Melilot Trefoil. Linn. Mant. 275. Suppl. 339. Willd. n. 3. Ait. n. 3. Sm. Fl. Grac. Sibth. t. 741, unpublished. Desf. Atlant. v. 2. 192. (T. fructu racemoso; Bocc. Muf. 163. t. 124. Melilotus meffanifis procumbens, foliculis rugosis sublongis, picis floreum brevioribus; Rafi Hift. 522. Tourn. Infl. 407. M. minima recta lutea, filigris candidis curitis in capitulum congeiffis, femine fonugreci; Morif. v. 2. 162. fect. 2. t. 15. f. 4. t. 16. f. 9. very good.)—Clutters shorter than the leafer. Legumes naked, ovate, pointed, with crowded, concentric, interbranching ribs, single-fed. Stems decumbent.—Gathered by Ray, in a moist situation, on the tongue of land separating the port of Messina from the Sraits of Sicily. Signor Arrofii, who fent us specimens in 1811, informs us this species is not now found about Messina, but in the fields of Girgenti. Profesfor Desfontaines met with it in fields in Barbary; and Dr. Sibthorpe in cultivated ground every where throughout Greece. It has the name of τριφύλλιον, which belongs indeed to most of this genus, in modern Greek. Dr. Sibthorpe judged it to be the λαυρέα of Dioscorides, a point equally difficult to difprove or establish. This species is little known in our gardens, though cultivated in Morifon's time, whose figure cannot be mistaken. The root is said to be annual, though furnifhing with many little flefty granulations, to enable it to refifit occasional drought, such as occur in Vicia latipetraeis, and other fome annual vetches. Stems feveral, a foot long, diffuse or procumbent, the central one only being erect, all stout, smooth, leafy, scarcely branched. Clutters axillary, oblong, hardly longer than the common foottallks, each on a short stalk, and composed of ten or twelve yellow flowers, twice or thrice as large as the lal$.$ The leaves are not very different. Legume one-third of an inch long, peculiarly diftinguifhing by its ovate, oblique, pointed, somewhat compressed, figure, and especially the numerous concentric elevated lines, like coiled horfe-hair, more or less interbranching in the middle, which occupy its fides. The luxuriance of the herbage, and the nature of its root, indicate this plant as worthy of agricultural experiment, though its proucntement mode of growth may be an objection to the mower. It is certainly very different from Mr. Sinclair's T. macrorhizum, Hort. Gram. Woburn. 296, of which we propofe to speak under T. officinale.

4. T. mauritianum. Barbary Melilot Trefoil. Willd. n. 4. Ait. n. 4. Sm. Fl. Grac. Sibth. t. 742, unpublished. (Melilotus fulteata; Desf. Atlant. v. 2. 193.)—Clutters longer than the leaves. Legumes naked, nearly orbicular, obtuse, pointless, with concentric elevated ribs, fingle-fed. Stems diftuse.—Native of cultivated fields in Barbary and Sicily; very abundant about Meliffa, according to Signor Arrofii. There can be no doubt as to the fynonym of Desfontaines. We have not seen the work of Schousboe, cited by Willdenow. This is an annual species, with numerous branching diffuse fteus, but more flender in every part than the laf$. Legums elliptic-lanceolate, obtufe. Flowers yellow, small, very numerous, in long, slender, linear, longif-foettaked clusters, much exceeding the leaves. Legume hardly fo big as in T. indicum, formed as it were of a convoluted line or hair, fome-what in the manner of the lafte, but the whole legume is not a quarter fo large, nor laks it any elongation or point. These two species have, nevertheless, been confounded by botanists, for want of a good figure of the prefeft, which deficiency the Flora Gracce will supply.


6. T. polonicum. Polish Melilot Trefoil. Linn. Sp. Pl. 1078. Willd. n. 6. Ait. n. 6.—Clutters lax, on very long flals. Legumes naked, two-fed, lanceolate, pointed, tranfverfly corrugated. Stem erect. Leaflets pointed, nearly entire.—Native of Poland. Sent to Kew garden in 1788, by M. Thouin. A very diflinct annual species, of a flender habit. Stem quite round. Leaflets obvato-lanceolate, acutely pointed, rather fikky, and fomewhat glaucous, almost perfectly entire; the odd one hardly an inch long. Flowers yellow, diftant, small, on long and flender partial flals; their common ones at leaft thrice the length of the leaves. Legume rather compreffed, pendulous, a quarter of an inch long, beaked, and tipped with the fstyle, not hairy.

7. T. spicatum. Spiked Melilot Trefoil. Sm. Prodr. Fl. Grac. Sibth. n. 1783. Fl. Grac. t. 743, unpublished.—Legumes naked, single-fed, spiked, erect, corrugated, acute. Stipulas awl-shaped, entire. Stem erect.—Gathered by Dr. Sibthorpe, in the isle of Cyprus. Raxon annual. Stem twelve or eighteen inches high, branched and bulky. Leaflets obovate, toothed, half an inch long. Spikes flalked, about as long as the leaves, confifting of yellow, deflaxed flowers; when in fruit becoming twice as long, more lax, and fome-what racemose, the legumes being flightly flalked, erect, roundifh-obovate, with a fhort broad point, tipped with the capillary white fstyle; their fides marked with concentric elevated corrugations. Seed globose.

8. T. dentatum. Toothed Melilot Trefoil. "Waldif. et Kitaib. Hung. v. 1. 41. t. 42." Willd. n. 7. Ait. n. 7.—"Legumes racemose, naked, two-fed, somewhat rugofe, rather acute. Stipulas toothed at the bafe. Stem erect."—Native of moif meadows in Upper Hungary. Peren-nial. Abundantly different from the officinale, the leaflets being sharply and doubly toothed; the fipulas also toothed, and deeply divided at their bafe. Willdenow.


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tivated fields, on clay or marle, throughout Europe, flowering in June and July. Not rare in England. Dr. Sibthorp met with it in moist low situations, throughout Greece and the Archipelago, and confirmed the old opinion, of its being the wild races of Dioscorides. From this old Grecian's venerable authority the plant has long been esteemed medicinal, but is now out of use; nor is it cultivated, with us at least, for any agricultural purpose. The seeds, even in a very small quantity, possess the flavour of flour. Martin, Sinclair.

The root is annual. Stem branched, two or three feet, or more, in height, angular and furrowed. Leaves dark green, smooth, obovate, serrated. Flowers full yellow, veiny, in long dense clusters. Keel and wings equal, and nearly as long as the standard. Legume hairy, transversely wrinkled, but not very strongly. Sigma capitate.

Mr. Sinclair's specimen named T. macrorhizum, in his elaborate and very valuable agricultural work, the Hortus Graminatus Woburnensis, 391, does not exhibit any marks of specific difference from the officinale, of which however it appears to be an important variety, differing in its biennial root, larger leaves and flowers. The seeds are two in each legum, never, as is sometimes the case with the officinale, more than two. It produces a great crop of fodder, or hay, at the time of flowering, but little afterwards. If kept from flowering, the root will last four or five years. Such is Mr. Sinclair's account, who nevertheless now candidly affents to our opinion of its being a variety. We have no means of ascertaining whether this may be Wildenow's macrorhizum, our n. 5, but it does not answer to his character. We can vouch for its being widely different from muf-.

Can it be Wildenow's officinale γ ?

10. T. germanicum. White German Melilot Trefoil. (T. officinale β; Willd. n. 8. Sm. Prodr. Fl. Grcc. Sibth. v. 2. 94. Melilotus; Rivin. Tetraps. Irr. t. 69. M. germanica; Ger. Em. 1220. M. vulgaris; Willd. Enum. 790. M. officinare germanum, flore albo; Tourn. Init. 407. Lotus sylvaticus, flore albo; Tabernaemontani. 583.) — Legumes racemose, naked, flingle-feeded, corrogated, obovate, acute. Stipulas tetaceous. Stem erect. — Native of cultivated fields in Germany. Dr. Sibthorp observed it near Theifallonica. Root biennial. Stem taller than the leaf. Flowers white. Wings longer than the keel, though shorter than the standard. The figure of Rivinus answers better to this description than to our common T. officinale, and was probably taken from what is the most usual German plant. We have never compared specimens, but must observe, that the stipulas are sometimes perfectly tetaceous in our officinale. — Gerarde feems to have been well acquainted with the germanicum, as was also his editor Johnston.


13. T. italicum. Italian Melilot Trefoil. Linn. Sp. Pl. 1078. Willd. n. 9. Ait. n. 9. (Melilotus italicus; Camer. Hort. 99. t. 29. excellent. Willd. Enum. 790. M. sicilicus pedunculatis, curto, luteo, &c.; Morif. sect. 2. t. 16. f. 4.) — Legumes racemose, naked, two-feeded, elliptical, obtuse, strongly corrugated, and crisped. Stem erect. Leaves roundish-obovate, nearly entire.—Native of Italy, Barbary, and Greece. Dr. Sibthorp gathered it on the dry parts of the famous mount Haynuttus, near Athens. This species has long been cultivated in curious gardens, both in England and on the continent. Gerarde describes it under his Melilotus, n. 2, but the figure does not agree. The root is annual. Stem flout, angular, leafy, about two feet high, overtopped, as the fruit advances, by the numerous, elongated, upright, cylindrical clfflers, of pendulous, almost elliptical legumes, each as big as a small pea, conspicuously for their strong, prominent, zigzag, and plaited wrinkles, by which the present species is clearly distinguished. Its leaves moreover are of a much broader and rounder figure than any of the foregoing, rather way than ferrated. Stilpulas ovate, taper-pointed, toothed. Flowers yellow. Dr. Sibthorp conjectured, with great probability, that this might be the kind of Melilot, mentioned by Dioscorides as growing in the south of Italy, about Nola, of a yellowish colour, and weaker feent.


15. T. creticum. Cretan Melilot Trefoil. Linn. Sp. Pl. 1078. Willd. n. 10. Ait. n. 10. (T. pellatum creticum; Bauh. Fl. t. 142, with a figure. Morif. sect. 2. t. 14. f. 3.) — "Legumes racemose, naked, two-feeded, membranous, compressed, bordered, nearly orbicular. Stem ascending. — Native of Crete, Greece, and Barbary. Root annual. Stem branched, twelve to eighteen inches high. Leaflets broad, thick and fleshy, like those of T. italicum, bordered with shallow teeth, inodorous. Flowers pale yellow. Legumes very remarkable for their broad, elliptical, nearly orbicular, flatthi figure, half an inch in diameter, in loose clfflers, two or three inches long. They are represented much too turgid in the above engravings, especially in Mornifon's.

16. T. ornitohpodus. Bird's-foot Trefoil. Linn. Sp. Pl. 1078. Willd. n. 11. Fl. Brit. n. 2. Eng. Bot. t. 1047. Curt. Lond. fig. 2. t. 53. Fl. Dan. t. 368. (Foenugrecum humile repens, ornithodipolus significant; (Bootyn. 531. t. 14. f. 1.) — "Legumes about three on a falk, naked, eight-feedeed, twice the length of the calyx. Stems procumbent. — Native of England, France, and Denmark, on barren gravelly heaths, among short gras, flowering in June and July. The fibrous annual root is furnished with feet tubercles, such as are mentioned under n. 3. Stems mostly simple, depredd, two or three inches long, clothed with little leaves, resembling many of the third section, the falks of the leaflets being all equal; and neither they, nor the flender pale-purple flowers, two or three on each short axillary falk, having any affinity to the Meli-
TRIFOLIUM.

Mellrots, with which the present species is associated entirely on account of its many-feeded, transversely furrowed, prominent, bivalve legumes, which moreover are umbellate, not racemose. This species therefore connects the Mellots by its fruit, with the true Trefoils by its habit, stipulas, inflorescence, &c. We should gladly have retained the genus Mellotus, adopted of late, from preceding writers, by Willdenow in his Enumeratio Plant. Hort. Berol. had we found his generic characters faithful. These are the deciduous corolla, and the burning legume, longer than the calyx. But the legume of molt of the Mellots does not burn, any more than that of a genuine Trifolium. Their general habit indeed, and their peculiar odour, agree far better with Triconella, (see that article,) than with Trifolium.

Scéé. 2. LOTOIDEA. Legumes covered by the calyx; with several seeds.

17. T. Lupinacfer. Balfard-lupine Trefoil. Linn. Sp. Pl. 1079. Wild. n. 12. Ait. n. 12. Mart. Rúll. t. 16. Curt. Mag. t. 879. (T. leguminus polygonpermus, folis pluribus; Gmel. Sib. v. 4. 19. t. 6. f. i.)—Flowers in short unilateral tufts. Leaflets five, without a naked common flalk. Legume with many seeds.—Native of Siberia. Observed also near Conflantinople by the abbé Seilmi and Dr. Sibthorpe. It sometimes appears in our gardens, from exotic seeds; but though hardy as to cold, does not endure long. The root is naturally perennial, tap-flaked. Stems erect, simple or branched, a foot, more or less, in height. Leaflets lanceolate, about an inch and half long, smooth, elegantly veined and finely toothed, usually five, rarely six or seven, each on a minute partial flalk, crowning the ribbed common one, which is bordered all the way up, on each side, with a long and broad membranous stipula. Flowers crimson, occasionally white, numerous, handflome, in terminal heads; their partial flalks directed one way, hairy, each with a little cup-like membranous bractia at the base.


8. T. levigatum; Desfont. Atlant. v. 2. 195. t. 208. Wild. n. 16.

Heads nearly globose. Legumes two-flaked. Stem erect. Leaflets lanceolate, finely serrated. Stipulas rhomboid, toothed at one side.—Native of Italy, Spain, France, Hungary and Barbary. Micheli gathered it in various grafty or healthy places about Florence, flowering in May. The root is annual. Leaflets somewhat like those of T. Lupinacfer, n. 17, in shape, but the lower leaves have a long common footstalk. The stipulas are remarkable for their square figure. Heads of flowers small, dense, on long, solitary, axillary flalks. Corolla white. Legume half-ovate, with a recurved beak. We agree with Willdenow, though we have not compared specimens, that the plant of Desfontaines is very near that of Micheli. Indeed we cannot find marks to define it as even a variety. Linnaeus adopted his T. fridam from the last-named author, in writing the second edition of Sp. Pl., but before that work was printed, he obtained a speci- men of what he thought the same, and this is elaborately described there, though the sorts annexed to the specific character, as in the original manuscript before us, indicates his not having seen the plant. What he there described is T. purisfìorum of Ehliart, Willdenow's n. 56, our n. 66. We must presume that this description, according so very ill with what professor Desfontaines found in Barbary, pre- vented his recognizing the Linnaean plant.

21. T. caespitosum. Tufted White Trefoil. Wild. n. 17. Reynier Mem. pour servir à l'Hift. Phyf. et Nat. de la Suisse, v. 1. 162, with a plate, under the French name of Treffe gazonnant. (T. Thali; Villars Dauph. v. 3. 478. t. 41.)—Heads roundish. Flowers flightly flalked, erect. Legumes mostly four-flaked. Leaflets obovate, minutely toothed. Stems decumbent, tufted, shorter than the flower-flalks. Native of the mountains of Switzerland and Dauphin, in barren, wafe, or trodden places. This most resembles our Common White Trefoil, or Dutch Clover, hereafter described, but the short, deprested, entangled stems, though composing a dense turf, do not creep. The root is woody and perennial. Stalks of the flowers, and even of the leaves, longer than the stems; the former terminal, solitary, erect, from two to five inches in length, bearing a globular, but flightly racemose, head of white flowers, purplish at the base, leaves deprested than in T. repens, but we find no perceptible difference as to the comparative inequality of their calyx-teeth. Legume small, elliptical, compressed, strongly ridged at each margin, beaked with the permanent style and capitate stigma, enveloped in the dry, brown, ribbed corolla, and containing three or four small seeds. No valuable properties with respect to agriculture have been discovered in this plant, nor has it been hitherto raised in England.

whom also we are indebted for the character of the legume having but two seeds, which we have never had an opportunity of examining. Stem upright, twelve or eighteen inches high, hollow, ferrated, smooth, leafy, with three or four upright branches, under each of which the main stem divergates at an obtuse angle. Leaves on very long stalks, with a pair of large, ovate, somewhat deltoid, pale, membranous, veiny, long, and taper-pointed stipulas: leaflets all equally nearly sessile, an inch long, broadly elliptical, rather ovate than obovate, emarginate, finely ferrated; the lower ones partly entire. Flowers white, on hairy partial stalks, composing numerous dense globose heads, hardly an inch in diameter, whole common stalks are but of a moderate length, stout, and angular. Such is the genuine T. hybridum of Linnaeus, whose synonymus above quoted cannot be disputed, though others have been confounded herewith. This is one of the species well worthy of agricultural experiment, though hitherto unnoticed in England. Its crop must be very considerable.

Linnaeus calls the stem "ascending" yet the specimen in his herbarium is perfectly erect, though zig-zag in the upper part. Ehrhart, in his Physiophyllum, n. 26, gives, under the name of T. hybridum, Upfal specimens whose stem is decumbent, or partly ascending, hollow, but not zig-zag. The leaflets are narrower, as well as much more sharply and copiously ferrated, than in the Linnaean specimen, and the flower-stalks are longer. This appears to be the Trifolium superficial corymbiferum annuum album majus, folsio longo obuto, filigium incurvum latam compressa ac dispermum; Mich. Gen. 28, t. 236, f. 5. The form of the leaflets perhaps is variable, as those of neither this, nor the true hybridum above described, do really answer well to Micheli's figures. This decumbent or ascending plant, doublets known to Linnaeus, must have been comprehended in his idea of T. hybridum, of which it is probably a variety. Ehrhart has named it, according to a mode of his own, Bubroma, indicating its value as food for oxen. The tubular flavescently distinguishes these two plants, whether species or varieties, from all to which they are near akin, especially from the following, and T. repens.

23. T. Vaillantii. Trailling White Clover, or Trefoil. Poiret in Lamarch Diet. v. 8, 4. Prodr. Fl. Græc. n. 1789. (T. n. 758; Hall. Enum. Rar. 41. Trifolium annuum corymbiferum album et procumbens, folio cordato, suffusus atro-viridem splendente, filigine tetraspermum, inferne falcatum diffimulatum; Mich. Gen. 27, t. 235, f. 6. Meibomius parasiticus humifusus, folis ferratis glabras; Vaill. Parif. t. 22, f. 1.)—Heads globular. Flowers flarked. Legumes four-seeded. Leaflets elliptico-obovate, finely ferrated. Stems branched, decumbent, folid, many-flowered.—Found in meadows and pastures about Florence very abundantly. Micheli. About Paris. Vaillant. In the meadows of Switzerland. Holter, Lachenal. In the Morea. Sibth. Some dried specimens of this do not, at first sight, look much unlike the Linnaean one of T. hybridum, though smaller, and the general size of every part is much less. The leaflets vary greatly, and are sometimes wedge-shaped. The deciduous character of the stem being not tubular, but filled with fpongy pith, and always decumbent, though not creeping, will ever clearly distinguish this from every variety of the last, to which we may add Micheli's mark of the four seeds, doublets correct; but some of them are liable to prove abortive, so that only one ripe seed can sometimes be found. The present species promises far less advantages to the cultivator than the hybridum or the repens, and therefore ought carefully to be distinguished from both.

24. T. repens. Common White Trefoil, or Dutch Clover. Linn. Sp. Pl. 1082. Fl. Suec. 259. Wildl. n. 18. Fl. Brit. n. 3, excluding the syn. of Vaillant. Prodr. Fl. Græc. n. 1790. Engl. Bot. t. 1769. Pursh n. 2. Curt. Lond. falc. 3, t. 46. Mart. Rufft. t. 34. Fl. Dan. t. 950. Riv. Tetr. Irr. t. 13, f. 2. (T. pratense; Ger. Em. 1185, the figure only. Trifolium pratense corymbiferum majus repens, n. 1—9; Mich. Gen. 26, t. 25, f. 1, 3 and 4.)—Heads nearly globose. Flowers flarked. Legumes four-seeded. Leaflets irregularly heart-shaped, or round. Stems creeping, folid, many-flowered.—Very common in meadows and pastures throughout Europe, from Sweden to Greece, and all the islands of the Archipelago, flowering from May to September, and varying exceedingly with regard to luxuriance, as well as in the pale and whithit, or dark and purplish, marks of its leaves. Mr. Puffin says it is found in fields, pastures, and cleared lands on the mountains of North America, making its appearance wherever lands are cleared of timber, in the most remote parts of the country; from 60 to 100 miles distant from any place where it grew naturally. So it springs up in recently cleared ground in England, being one of the most universal plants of the temperate zone. It forms an excellent bottom for pastures, and is particularly valuable for fodder in the dry autumnal months. Mr. Sinclair thinks it less eligible in the spring, except mixed with grasses, being apt to caustic in sheep the delicate termed red-water, especially if the weather be cold and moist. The roots are fibrous and perennial. Stems many, quite prostrate, branched near their origin, creeping to a great extent, with radicles from most of the joints; they are round, smooth, full of pith. Leaves very variable in size, and somewhat in shape, sharply toothed, on long stalks. Stipulas tubular. Flowers stalks much longer than the leaves, axillary, solitary, mostly erect, angular, folid. Heads rather depressed. Flowers white, brown in decay. Legumes oblong, smooth, with three or four seeds. In oler-holts, and fuch rich moor places, the stem is much upright and luxuriant, but being folid, cannot be confounded with T. hybridum, a species never yet discovered in England, any more than T. Vaillantii. Linnaeus blames Micheli for making a great number of imaginary species out of this common T. repens, but he himself, in some degree, has erred, on the other hand, in confounding two or three very different species together. How far we are correct in citing Micheli as above, and whether some other things, distinguished by him, do not likewise come under the repens, could be determined only by a most careful scrutiny of his own specimens, and perhaps the cultivation of the plants themselves.

25. T. ambiguum. Doubtful Pale Trefoil or Clover. Bieb. Taur. v. 2, 208, excluding the syn. of Haller, n. 368, not 138. (See T. hybridum, n. 22.)—Heads with flarked flowers. Legumes with one or two seeds. Calyx-teeth nearly equal. Standard lanceolate. Leaflets ovate, bluntsih, finely ferrated. Stem creeping.—Frequent in the meadows of Tauria and Caucassus, as well as about the Don and the Wolga, flowering in summer. Larger and more robust than the hybridum and repens, equally creeping and forming tufts. Flowering flaves a span, rarely a foot, in length. Stipulas lanceolate, withering. Leaflets the size of T. alpina, but broader and blunter, yet not emarginate, frilated in like manner with very prominent ribs, ending in extremely sharp and crowded marginal teeth. Heads dense, twice the size of the two species just mentioned, as are also the flowers, which are bent downwards as they fade. Calyx frilated, with awl-shaped divericat

[teeth,]

26. T. compositum. Tufted Trefoil. Linn. Sp. Pl. 1860. Wildl. n. 20. Ait. n. 18. (T. carolinianum; Michaux Boreal.-Am. v. 2. 58; Pursh n. 3; Poiré in Lamarck n. 2; Lagopus americanus, floribus majoribus comosib; Petiv. Mut. 26. n. 254.) — "Heads globose. Flowers stalked, imbricated. Standard deflexed, permanent. Legs four-seeded." — Native of America. Linnaeus. The carolinianum of authors, here quoted with doubt, is described as diminutive and erect; its leaves ineruption, heart-shaped, roundish, smooth, fringed and finely crenate; stipules cloven; heads reflexed, of few flowers; corolla hardly projecting beyond the calyx; seeds about three. This is found in sandy fields near Charlestown, South Carolina, flowering from June to August, and is perennial. Flowers small, white. Pursh. How far the opinion of Poiré, adopted by Pursh, that the above two plants constitute one species, is correct, we are utterly unable to determine, having seen neither; but Poiré's definition of the flowers is altogether at variance with that of Michaux and Pursh.

27. T. alpinum. Dwarf Alpine Trefoil. Linn. Sp. Pl. 1860. Wildl. n. 21. Ait. n. 19. Dickf. Dr. Pl. 38. (T. n. 363; Hall. Hist. v. i. 161. T. alpinum, flore magno, radice dulci; Bauh. Prod. 143, no figure. T. alpinum, T. rheticum, atfragaloides; Bauh. Hist. v. 2. 376. T. angustifolium alpinum; Germ. Em. 1207. Trifolium angustifolium alpinum; Po, Bald. 194.) — Heads hemispherical, somewhat racemose and whorled. Flower-flats radical, naked. Legumes two-seeded, pendulous. Leaves linear-lanceolate. — Abundant in the alpine pastures of Switzerland, Italy, the Pyrenees, and the south of France, flowering in August. The most unscientific visitant of these beautiful scenes could hardly overlook this plant, whose large bright crimson flowers, each above an inch long, seem to spring almost immediately from dense tufts of no less elegant leaves. If this species, procured for the English gardens above forty years ago by Dr. Pitcairn and Dr. Fothergill, be still preferred, a coloured figure of it would be highly acceptable to the public. The root is perennial, thick and woody, running very deep into the ground, and fail to have the sweetnens of liquorice. Stems very short, or scarcely any. Herbace smooth. Stipulas long, lanceolate, membranous, finely frilled. Common flower-flats simple, often not taller than the leaves. No other species can be confounded with this.

28. T. involucratum. Striped-flowered Trefoil. Wildl. n. 49. Dorn. Cant. ed. 5. 183. — Heads roundish, dense, each with an orbicular, ribbed, many-toothed, spinous involucrum. Stem erect, branched. Leaves lanceolate. Stipulas many-toothed. Legumes two-seeded. — Native of the west coast of North America, from whence its seeds were brought by Mr. Menzies, and raised in the Cambridge garden in 1791. We obtained specimens there Augst 24, 1796. Yet this species does not occur either in Hert. Kew, or in Pursh, nor did we discover it in Willdenow, till we had hit on the same name, he having greatly misplac'd it, in the next section, after T. angustifolium. The root is annual. Stem twelve or eighteen inches high, branched, leafy, hollow, round, smooth like the rest of the plant. Stipulas membranous, with many unequal bristly teeth. Leaflets elliptic-lanceolate, toothed, an inch or an inch and half long. Heads of flowers above an inch broad, on long, flout, fribated, axillary flaks, and each subtended by a very remarkable membranous orbicular involucrum, whose strong, close, radiating ribs, end in unequal spinous teeth. Flowers sessile. Calys ribbed and spinous, membranous, pale with green teeth. Corolla variegated with purple and white. Legume ovate, abrupt, compressed, with two entirely distinct valves, and two seeds. The whole plant sometimes becomes very diminutive from irritation. Sect. 3. LAGOPODA. Calys more or less villous.

29. T. subterraneum. Subterraneous Trefoil. Linn. Sp. Pl. 1860. Wildl. n. 22. Fl. Brit. n. 4. Engl. Bot. t. 1038. Curt. Lond. falc. 2. t. 54. Rivin. Tetrap. l. 13. f. 1. (T. pulchrum, florulis longis albis; Hall. Syn. 327. t. 13. f. 2.) — Heads of about four flowers. Calys-teeth linear, hairy. Involucrum central, reflexed, rigid, flower-like, embracing the fruit. — Native of Italy, the Levant, France, and England, on dry gravelly heaths, among short grats, flowering in May, and very common in Hyde park, Greenwich park, &c. Root annual, knobbled. Stems defcribed, spreading, almost concealed by the numerous, broad, pale purple-veined stipulas. Leaflets ineruption, heart-shaped, dark green, hairy. Flower-flats at first erect, each bearing three or four flowers, conpicious for their long white corolla. After flowering, these flaks bury the legumes, which are thin and single-seeded, in the ground, and fix them there, by shooting out several spreading stems and thick fibres, constituting an involucrum of the fruit, though apparently like roots. The herbage of this species is triiling, and it conduces to the spring vurder of many of an other barren tract, has nothing to encourage cultivation.

30. T. globosum. Globular Cotton-headed Trefoil. Linn. Sp. Pl. 1861. Wildl. n. 23. Ait. n. 21. Sm. Fl. Græc. Sibth. t. 744. unpubil. (T. orientale, capitare lanceolato; Tourn. Cor. 27.) — Heads globosum, many-flowered. Calyx very hairy all over, with linear teeth. Upper flowers numerous, abortive, densely villous. Stems decumbent. Native of Arabia and Syria, as well as of Cyprus and Asia Minor. A rare annual species, which Linnaeus cultivated from Haakель's seeds, and which may have been in our gardens a century ago, though not at present to be met with. It preserves some analogy with the last, though very unlike in appearance, having many pink flowers, in upright heads, and the stems are few less defcribed. The leaflets have each a white transverse stripe, but not constantly. The analogy allude to the flowers, which perfect seed, being overwhelmed and borne down by a number of abortive ones above them. These seem to grow out as the others fade, in the form of empty calyces with innumerable, woolly, entangled teeth. No figure of the present species has yet appeared, but Mr. Bauer has prepared a very admirable drawing for the Flora Græc. 31. T. bifidum. Brilly-headed Trefoil. Desfont. Atlant. v. 2. 300. t. 209. f. 1. Wildl. n. 24. (T. hierium; Allion. Auctuar. 26.) — Heads terminal, solitary, globose. Calyx very hairy, with taper teeth. Involucrum of several roundish-ovate pointed leaves. Stem erect. — Gathered by Desfontaines in fields in Barbary, near Maf-
car; by Allioni in Monteferrato. Root annual, long and tapering. Stem erect, a palm high, more or less branched in a corymbose manner, fristated, leafy, flabby with soft hairs, as are likewise the leaves and their footflaks. Leaf-
lets obovate, finely toothed, obtuse, not emarginate. Heads many-flowered, sessile, subtended by three or four clove, membranaceous, ribbed, hairy bracteas, all pointed, and a foliary
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Solitary leaf like those lower down. *Corolla rose-coloured, longer than the calyx-teeth, which however gradually extend beyond it as the flower fades. We much doubt whether this be a distinct species from the following. The *bracteae* are very similar, except being pointed, and the position of the *florum* to the *leaflets*, as well as the form of the *leaflets*, are known to be uncertain marks.

32. *T. Cheriellii.* Hairy Pink Trefoil. *Linn. Sp. Pl. 1821*. Wild. n. 25. *Sm. Fl. Græc. Sibth. t. 745*. unpubl. *(T. glomerulus, perforans; Cheriellii; Bauh. Hift. v. 2. 377).* Lagopus minor, minupus, mollis et compresso capitatum, flore albo; *Barrel. Leit. t. 899.*—Heads terminal, solitary, globosum. Calyx very hairy, with taper teeth. *Involucrum* of three roundish-ovate pointless leaves. Stems procumbent.—Native of France, Spain, and Barbary, in barren dry places. Dr. Sibthorp gathered it on the shores of Greece and the Archipelago. The seeds are sometimes introduced into our gardens from abroad. This is a little annual species, usually with several procumbent *florum*, three or four inches long; in a starded state having a solitary more erect one. *Leaflets* inerexly heart-shaped, with a dark-purple mark. *Flowers* numerous, in dense heads. *Corolla* twice as long as the calyx, pale bluish-coloured, with a long crimson standard; but the calyx-teeth subsequently rise above it. The *involucrums* leaves are like the leaf, except in being blunt, and are also accompanied by a leaf.—*T. pietum*, Wild. n. 26. Bieberf. *Taur. v. 2. 210,* appears not to differ from *T. Cheriellii*, and is doubtless Dr. Sibthorp's plant gathered on the shores of Greece and the Bosphorus. Nothing can be more uncertain than the spots on the leaves, which gave occasion to the name; and the proportion of the *corolla* to the calyx depends on the period of examination. Barrelier faithfully represents it longer than the calyx in *Cheriellii*, when the flower is in perfection.

33. *T. sphaerocapum.* Round-headed White Trefoil. *Desfont. Atlant. v. 2. 201. t. 209.* f. 2. Wild. n. 27.—Heads terminal, solitary, globosum. Calyx very hairy, with taper teeth, twice the length of the *corolla*. *Involucrum* of three rounded leaves. Stems procumbent.—Native of fields in Barbary, near Mascara. *Desfontaines.* Very like the leaf, except its little white *corolla*, shorter than the *calyx*. The citation of Barrelier, copied by Willdenow from Desfontaines, is the very name which, in the preceding page, he had transferred from *Linnæus*, though let exactly given by the latter. The proportion of the *corolla* does not answer to this, but to *T. Cheriellii*, which may very probably have occasionally, as Barrelier says it, have a white *flower*. We should hardly scruple to reduce these three last described, with *pietum*, to one species.

34. *T. faxatilis.* Thyme-headed Trefoil. *Allion. Pedem. v. 1. 305. t. 59.* f. 5. Wild. n. 28. *(T. thymiflorum*; Villars. *Dauph. v. 3. 487.* T. parum rectum, flore glomerato cum una globulis; *Bauh. Hift. v. 2. 378.* Trefte des glaciers, *Reyn. Mem. pour servir a l'Hist. Phyf. et Nat. de la Suisse*; v. 1. 166.)—Heads terminal, mostly in pairs, hemispherical, leafy. *Calyx* densely hairy, with taper teeth, as long as the *corolla*. Upper *florum* bracteaceous, ovate, acute. *Leaflets* wedge-shaped, emarginate.—Native of the sandy beds of torrents, among the alps of Dauphiny and Piedmont, or the glaciers of Switzerland. Our *specimens* from M. Reynier's herbarium were gathered at the glaciers of mount Sylvia, which terminates the valley of St. Nicholas in the Valsis, by the celebrated herbalist M. Thomas. The *root* is described as biennial. *Stems* several, a finger's length, fimple, leafy, rather filthy than hairy, crowned with one or two small, densely filthy *heads*, of little white *flowers*; the central ones, according to Villars, imperfect or abortive. *Leaflets* small, silky, scarcely toothed, deeply emarginate. *Stipula* purplish, ribbed, acute, for the most part lanceolate, but those of the two opposite leaves, close under the heads of flowers, are broad and ovate, serving as *bracteae*.


37. *T. bifolium.* Hairy Cape Trefoil. *Thunb. Prodr. 136.* Wild. n. 31.—Heads globose, hairy. Stems herbaceous, diffuse. *Leaflets* oblong, hairy.—*Found also at the Cape, by Thunberg. It is impossible to form a correct idea of these three last species, from the above characters, which fuit equally well a number already known, to wchich the author appears never to have adverted. We merely register these plants here for future inquiry.


40. *T. rotundifolium.* Round-leaved Lilac Trefoil. *Sm. Prodr. Fl. Græc. Sibth. t. 1795.* *Fl. Græc. t. 747.* unpubl.—Heads globose, terminal, fimple, with lanceolate *bracteae*. *Calyx* very hairy, longer than its teeth. Stems fimple, diffuse. *Leaflets* nearly orbicular, toothed, hairy.—Gathered by Dr. Sibthorp in the Morea. A very pretty and distinct annual species, which seems never to have been noticed before. The *florum* are scarcely a fpan long, clothed, like the rest of the herbage, with copious hairy hairs. *Leaflets* remarkably round, not half an inch in diameter, strongly and unequally toothed. *Calyx* tubular, very slightly inflated, with short, lanceolate, upright teeth. *Corolla* twice the length of the *calyx*, elegantly variegated with
with pale purple and white, its petals distinct. *Germen* hairy.

41. *T. Lagopus*. Oblong Hairy Trefoil. Wild. n. 34.

42. *T. foliolatum*. Stipulaceous Cape Trefoil. Thunb. Prodr. 237. Wild. n. 35.—"Heads villous, ovate, terminal. Stems herbaceous, decumbent at the base. Leaflets jagged, villous."—Found at the Cape of Good Hope, by Thunberg, whose specific character is all we know of this species. The word "herbaceous" is truly superfluous in any specific character of a *Trifolium*!


44. *T. rubens*. Red Long-spiked Trefoil, or Clover. Linn. Sp. Pl. 1081. Wildl. n. 36. *App. n. 26*. *Jacq. Annu. t. 385*. Mart. Ruff. t. 9. (Lagopus major, *spicis longioribus*; *Gen. Em. 1192*.) —Spikes long and cylindrical. *Calyx* teathy, the lowermost about the length of the monopetalous corolla. *Stipulas* sword-shaped, longer than the footstalk. Leaflets lanceolate, sharroweared. Stem erect.—Native of Italy, the south of France, Germany, and Switzerland, especially in the warmer meadows of the latter, where, according to Haller, this handsom* species* is very common. It flowers in summer, and found a place in our English gardens in Gerarde's days. *Root* perennial. Stem one or two feet high, erect, firm, full of solid pith, smooth like the very elegant, finely ferrated, and veined, leaflets, which are two inches long. Their common *flask* is united almost entirely to the long, entire, even, sharp-pointed *flippers*, which reach far beyond it. *Flowcrs* crimson, in dense, cylindrical, thick, blunt *flippers*, two or three inches long, becf with the prominent bristle *calyx-teeth*, of which the lowermost is much the most conspicuous. This Trefoil, though not hitherto brought into cultivation, feems, as profeftor Martyn obferves, of a good quality, and sufficiently productive.

45. *T. pratense*. Common Purple Trefoil, or Clover. Linn. Sp. Pl. 1082. Wildl. n. 37. *Fl. Brit. n. 6*. *Engl. Bot. t. 1770*. Mart. Ruff. t. 31, and t. 36. *Fl. Dan. t. 989*. *Afcz. Tr. of Linn. Soc. v. 1. 240*. *Matth. Valgr. v. 2. 189*. (T. pratense purpureum; *Fuck. Hilt. 817*. *Trifolium*; *Rivin. Tetrap. Irr. t. 11. f. 1*.) —Spikes ovate, dense. Stems ascending. Corolla monopetalous, unequal. *Four of the calyx-teeth equal. Stipulas* awned.—Common in draffy meadows and pastures throughout Europe, flowering from May to September. In its native situations, particularly on dry calcareous or gravelly hills, this valuable plant is truly perennial, though, like Saintjohn, lefs permanent in cultivated manured land. For its agricultural properties, and management, fee *Clover*. Great difficulties have long attended the botanical discrimination of this and some other species, which we shall presently describe; but they are for ever fet at reit, by the moft minute and laborious details of Mr. Afheus, in the firft volume of the Linncean Society's Transactions. Nor is this question merely curious or speculativė; for the qualities of the plants, in an economical view, are as widely different as can well be. The *root* of *T. pratense* is tapering and branched, but not creeping. *Stems* about a foot high, more or lefs, slightly branched, leafy, folid, downy in the upper part. Leaflets elliptical, more or lefs acute, entire, smooth, with a pale lunate spot. *Upper leaves*, near the flowers, moftly opppofite. *Stipulas* rather broad, ovate, pale, purple-ribbed, with taper points. *Spikes* terminal, folitary, fefile, of numerous light-purple flowers, with a sweet, but faint fcent, their petals united at the base, and combined with the *filaments*. *Calyx* hairy, ten-ribbed, its lowest tooth longer than the reit, but much shorter than the corolla. The figures in Fl. Dan. and *Martyn* represent the cultivated plant; that of *Engl. Bot.* the wild one. What *Dillenius* represents, in his edition of *Ray's Synops*, t. 13. f. 1, feems merely a varief plant. There is faid to be a procumbent, very hairy, kind, found on the loftielt mountains of Switzerland and Dau- phiny, which is alfo a variety.


47. *T. alpefr*. Oval-spiked Narrow-leaved Trefoil, or Clover. *Linn. Sp. Pl. 1082*. Wildl. n. 39. *App. n. 29*. *Jacq. Annu. t. 433*. Mart. Ruff. t. 1. *Afcz. Tr. of Linn. Soc. v. 1. 234*. (T. folio longior, folio purpureo; *Rivin. Tetrap. Irr. t. 12. f. 1*.) —Spikes oblonge, mostly folitary. Calyx-teeth hairy; the lowermost as long as the monopetalous corolla. *Stipulas* bristle-pointed. *Leaflets* lanceolate, nearly entire. Stem fimple, erect.—Native of mountain forests, in Siberia, Germany, Thracet, and Swit- zerland. The late Mr. Davall, who never met with this species, except in one little spot, in a foil near Orbe, was perfuaded it was unknown to Haller, his n. 376, though taken for this, being probably our *medium*. Among fifteen or fixteen piant*, Mr. Davall faid but one with two heads of flowers. *Root* perennial. *Stems* ftraight, angular, downy, a foot high. *Leaves* moft like *T. rubens*, as beautifully ftriated with veins, but far lefs viufibly toothed. *Stipulas* hairy, linear, united to the *footstalk* about half its length only; their points almost thread-flaped, very long, hairy, shorter than the lower *footstalks*, longer than the upper. *Flowers* crimson, in a round head, overtopped by the upper leaves. *No use for cultivation, affording few leaves, and never branching."

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Stipulas awned. Stem branched. Leaflets ovate, obtuse, slightly and minutely toothed."—Found by Mr. Schouboe in Morocco. Root annual, or biennial. Willd. We know nothing more of this species.


50. **T. pannonicum.** Hungarian Trefoil, or Clover. Jacq. Obs. falc. 2. 41. t. 42. Linn. Nat. ed. 2. 376. Willd. n. 40. Ehrb. Pl. Select. n. 9. Allion. Pedem. v. 3. t. 334. f. 2. (T. orientale major villosissimum, floribus flavescensibus; Tourn. Cor. 27.)—Spikes dense, elliptical-oblong, solitary. Calyx hairy; its lowest tooth longest. Corolla monopetalous; standard very long and linear-lanceolate. Stipulas with awl-shaped points. Leaflets hairy, nearly entire, minutely pointed. Stem erect.—Native of meadows in Lower Hungary, Armenia, and about the Bithynian Olympus. Cultivated by professor Williams, at Oxford, in 1790. One of the most striking species, on account of its very large and dense oblong spikes of innumerable cream-coloured flowers, whose corolla is about an inch and a quarter long. The root is perennial. Stem a foot and a half or two feet high, sometimes a little branched. Leaflets an inch and a half or two inches long, elliptic-lanceolate, either quite entire, or bluntly toothed towards the end, which is tipped with a little spiny point. Stipulas oblong, ribbed, united to the lower half of each footstalk; their points nearly twice as long, awl-shaped, hairy. Calyx furrowed, its upper part, and long teeth, clothed with long and dense silky hairs. The prominent rounded angle of each wing of the corolla retains, in the dried specimens, a remarkable whitish, sometimelike of which may be seen in *T. ochroleucum*.

Professor Willdenow, in a note to his Enumeratio, 793, has separated Tournefort’s plant by the name of arnatum, distinguishing it chiefly by the leaflets being linear-lanceolate, and emarginate; for the slight differences in the proportion of the lower calyx-tooth and tube of the corolla, as well as the casual branching of the flaps, are of no moment. Our Bithynian specimens have certainly narrower leaflets than one sent from Piedmont; but those in the Linnaean herbarium, as well as the plates of Jacquin and Allioni, are intermediate between the two. We have not examined an authentic specimen of Tournefort, but there is no reason, from Willdenow’s definition, to suppose his a different species.

51. **T. elongatum.** Long-beaked Trefoil. Willd. n. 41. —Spikes lax, elliptical, solitary. Lower calyx-tooth the length of the wings of the monopetalous corolla. Standard very long. Stipulas lanceolate. Leaflets lanceolate, vitous. Stem ascending, branched."—Native of Galatia. Perennial. The whole plant is villous. Stem half a foot high, branched from the base, round, flattened. Leaflets toothed at the extremity. Stipula oblong, with a lanceolate point. Calyx tubular, villous; with falcate teeth, four of which are nearly equal. Standard lanceolate, twice as long as the wings or keel. Differences from *T. alpestris* in having small leaves, a longer standard, a branched ascending stem, and in being a hairy plant. Willdenow.

52. **T. cernuum.** Hoary Oriental Trefoil. Willd. n. 42. Ait. n. 31. Sims in Curt. Mag. t. 1168. (T. trichocephalum; Bieberf. Taur. v. 2. 212. T. orientale canecens, capitulo oblongo, fordidè albo; Tourn. Cor. 27.)—Spikes ovate, lax, solitary. Calyx-teeth hairy, lanceolate, all nearly equal. Corolla monopetalous. Stipulas taper-pointed. Leaflets elliptical, villous. Stem simple, ascending.—Native of Cappadocia, and of the alpine heights of Caucasus, towards Armenia. Mr. Lodiges of Hackney received it from the neighbourhood of mount Caucasus. A hardly perennial, flowering in May. Root cylindrical, rather woody, branching at the top into several leafy tufts. Stems several, a span high, or not so much, covered with close silky hairs, slightly leafy. Leaflets hardly an inch long, more or less acute, very nearly entire; most frizzed with fine elevated ribs near the edge. Stipulas pale, membranous, gradually tapering into a hairy point. Spike thick, two inches long. Calyx hairy; its lower tooth very little the longest. Corolla cream-coloured. We conceive there can be no doubt of the correctness of the above synonymes, though we have not compared specimens.

53. **T. ochroleucum.** Sulphur-coloured Trefoil. Linn. Syn. Nat. ed. 2. v. 3. 233. Wild. n. 47. Ait. n. 36. Fl. Brit. n. 5. Engl. Bot. t. 1224. Jacq. Auffr. t. 40. Curt. Lond. falc. 6. t. 49. Mart. Ruff. t. 35. Azel. Tr. of Linn. Soc. v. 1. 229. (T. squarrosum; Linn. Sp. Pl. 1882. Wild. n. 44. Ait. n. 33.)—Spikes elliptical, hairy. Lower calyx-tooth very long, linear, finally reflexed and rigid. Stem erect, downy. Lowest leaflets inverversly heart-shaped.—Found in dry, bushy, gravelly or calcareous pastures, in England, Switzerland, Austria, and the south of Europe, as far as Constaninople, flowering in June or July. Root branching, perennial. Habit of the plant between pretensis, medium, &c., with which it agrees in size, and pannonicum, which it resembles in colour of the flowers. The whole point of the wings, when dry, is conspicuous in both. The leaflets are twelve or eighteen inches high, fohd, but little branched, and of a fliff, slender, bare aspect. Leaves dilatant, on longish stalks; the uppermost opposite; leaflets linear-oblong, or somewhat elliptical, those of the lower leaves short, rounded, or obcordate; all hairy, and almost perfectly entire. Stipulas linear, tubular, close, with simple ribs, and an very taper point. Head terminal, flat, and erect, of a dirty, brownish or yellowish colour. Calyx furrowed, hairy, with bristle-shaped teeth, the lower one twice the length of the rest; and, after flowering, still more elongated, hairy, and reflexed, giving the head a fleshy-like aspect. Corolla monopetalous, yellowish cream-coloured, with a long erect standard. Legume membranous, with one seed, in the swelling tube of the calyx.

We remove this species nearer to its allies than were Willdenow has placed it. In an advanced state, it was described by Linnaeus as distinct, by the name of squarrosum, but the original specimen from Sauvages’s herbarium has enabled us to correct this mistake. The synonym of Morphon, sect. 2. t. 15. f. 1, evidently belongs to *T. angustifolium*, n. 57, though possibly his "other species, with a round leaf," may be ochroleucum; but this is of little importance. What *T. squarrosum* of Bieberf. Taur. v. 2. 214, with a purplish flower, may be, we cannot determine. It is requisite to correct an error in Fl. Brit. where Fuchs is cited improperly, his plant being *T. montanum*, hereafter described.

55. T. maritimum. Teasel-headed Trefoil. Hudf. ed. 1. 284. Fl. Brit. t. 220. Willd. n. 43. (T. flaccidum; Hudf. ed. 2. 326. T. flaccidum gracilis; Ger. Emm. 1208. Pluk. Phyt. t. 113. f. 4.) Spikes terminal, nearly globose. Calyx-teeth lanceolate, leafy; finally spreading. Stipulas lanceolate. Leaflets oblong. Native of dry sandy fields, throughout Europe and the Levant, as well as in North America, from Canada to Virginia, flowering in July and August. Root annual. Herb very various as to luxuriance, erect or decumbent. Stems much branched, rather zigzag, round, hairy. Leaflets from half an inch to an inch long. Stipulas ovato-lanceolate, acute, ribbed, often red. Spikes from half an inch to an inch and a half long, but always about half an inch thick, very soft and downy, the flender, prominent, equal calyx-teeth being densely fringed, with fine, silky, reddish hairs, and projecting far beyond the little white corolla. Legume very small. An entirely useless weed, not eaten readily by any animals that we are acquainted with.


The herb is annual, varying much as to luxuriance, always considerably spreading, or diffuse. Leaflets small and abrupt. Flowers white, or bluish-coloured, monopetalous, the standard erect, rising much above the very hairy calyx, whose enlarged, red or tawny, teeth spread in a flary manner after flowering, when their crimson bafes are elegantly contrasted with a dense tuft of white cottony hairs, which clofe the mouth, and conceal the little membranous single-fed legume.

60. T. leucanthum. White-blossomed Tartaric Trefoil. Bieb. Taur. v. 2. 214.—Spikes villous, nearly globose, flaked. Calyx spreading, with nearly equal teeth, shorter than the corolla. Stipulas awl-shaped. Leaflets obovate-oblong, slightly serrated at the extremity. —Native of dry hills, in the southern parts of Tartary, flowering in May and June. Pallas mitook it for T. flaccidum, to which it is described, in the above work, as being very near; but the stems are only about a finger’s length, stipulas lanceolate-awl-shaped, entire, (which is the most material distinction,) leaflets more oblong, at least the upper ones, flowers smaller, the villous hairs of the calyx (we presume in its mouth) reddish, not white.


T. pratense,
TRIFOLIUM.

T. pratense, but the leaflets are shorter and rounder, sometimes marked at each side with a small marginal purple streak, not a central spot. Flowers either light roselicoloured, or white. Calyx very remarkable, especially as the fruit advances, for its broad, ovate, pointed, hairy, many-ribbed teeth, or segments, forming a sort of five-angled shield, green and leafy, its mouth closed by an oblong valve, under which is the small, membranous legume, with a gibbous seed. The great inequality of its calyx-teeth distinguishes this plant from the flailatum and maritimum; its broad stipulae approach the former, but are totally unlike the latter. Indeed these three species, though more naturally allied, by the peculiarities of their calyx, to each other than to any of the foregoing besides, are very unlike in habit. Many of the following accord with them in the leafy nature of their calyx, but differ in having lateral heads, to say nothing of their much smaller dimensions.

62. T. albifidum. Whitith Starry Trefoil. Retzius. Obf. fasc. 4. 30. Willd. n. 53. Ait. n. 41.—"Spikes falked, nearly globular. Calyx spreching; its lower tooth linear-awl-shaped. Stipulae linear-awl-shaped. Leaflets oblong. Stems diffuse."—The native country of this species is unknown. Professors Retzius raised the plant from seeds sent him under a wrong name. Mr. Aiton mentions it as introduced at Kew about 1796. It proves a hardy annual, flowering in July and August. The stems are branched, round, slightly downy; branches knotty at the base. Leaves opposite; leaflets of the lower ones ovate, of the upper lanceolate, with a short recurved terminal bristle, the margin and keel fringed. Stipulae falked with green and white. Heads on long straight stalks, without floral leaves; nearly globular when in flower, ovate in fruit. Calyx cylinrical, downy, with close-pretted awl-shaped teeth; the lowestmost three-ribbed, about the length of the corolla, which is yellowish-white and monopetalous; the dorsal ones, which are rather shorter than the two next, are clapped to close to the corolla, that their points are hidden under the lateral teeth. As the fruit advances, the calyx-teeth become dilated and spreading, as in T. flailatum. Retzius. We have seen no specimen.


64. T. echinatum. Little Hedge-dog Trefoil. Bieberf. Taur. v. 2. 216.—Heads ovate, terminal and axillary, falked, leaflets. Calyx-teeth awl-shaped, unequal, hairy, shorter than the corolla. Stems declining, branched. Leaflets obovate-oblong, entire."—Native of mountainous. Annual. Habit of T. lappaceum, n. 38. Stem rather hairy, with subdivided branches. Stipulae awl-shaped, hairy. Leaflets entire, slightly hairy. Flowers-stalks much longer than the heads. Calyx falked, downy all over; tube very short; teeth extremely narrow, finely pointed, clothed with spreading hairs; the lowermost longest; all widely expanded when the fruit ripens, as in T. lappaceum. Corolla monopetalous, pale, twice the length of the calyx, with a long lanceolate standard. We have seen no specimen. This species appears indeed to be very near lappaceum, though ranged after fcalbria by the learned author who is our only guide.


66. T. parviforrum. Small-flowered Trailing Trefoil. Ehren. Beitr. v. 7. 165. Fl. Seelci. n. 29. Willd. n. 56. Bieberf. Taur. v. 2. 218.—Heads globoso, axillary, falked, nearly smooth. Calyx-teeth awl-shaped, rather unequal, spreading, recurved, longer than the corolla. Stem procumbent. Leaflets ovate, toothed. Native of Hungary and Siberia. Willdenow. Linneus knew this plant, but confounded it with his fetrion; see n. 20. It is most akin to gloomeratum, in size, habit, smoothness, mode of growth, and peculiar characters; but differs essentiually in the length and form of its calyx-teeth, as well as the falked heads, and remarkably membranous pellucid stipulae, with green awl-shaped teeth. The corolla seems to be rofe-coloured. A few hairs are sometimes seen on the calyx, which is very strongly falked.

67. T. fexfutum. Soft Knotted Trefoil. Linn. Sp. Pl. 1805. Willd. n. 57. Fl. Brit. n. 12. Engl. Bot. t. 1843. (T. parvum hirtutum, floribus parvis dilutae purpureis, in glomerulis mollisibus et oblongis, femine magni; Raiti Syn. 329. t. 13. f. 5; Vaill. Parif. t. 33. f. 2.) Heads ovate, falked, lateral and terminal. Calyx elliptical, hairy, furrowed, with brifile-shaped, rather unequal, teeth. Leaves downy. Native of dry, rather barren, sandy pastures, in Germany, Hungary, France, Spain, and England, flowering in June. Root annual, with small fethy knobs. Whole herb downy, and very soft to the touch, by which it is known from all the species which it otherwise resembles. Stems procumbent, from three to six inches long, branched, round, often zigzag. Leaflets ovate, finely toothed. Stipulae ovate, broad, pointed, somewhat membranous between the ribs. Heads mostly terminal. Calyx-teeth green, fringed, lengthened out after flowering. Corolla pale rofe-coloured, about as long as the calyx. Germin with rudiments of two seeds; legume with only one, which is thrice as large as that of gloomeratum, n. 65.

68. T. gemelum. Twin-headed Trefoil. Willd. n. 58. —Heads oblong, terminal, in pairs. Calyx hairy: its teeth brifile-shaped, unequal, longer than the corolla. Leaflets wedge-shaped, emarginate, finely toothed at the extremity. Stems simple."—Native of Spain, from whence specimens were sent by the abbé Pourret, to professor Willdenow, under the above name. Root annual. Stems a finger's


70. *T. alexandrinum.* Egyptian Trefoil. *Linn.* Sp. Pl. 1885. Ameon. *Acad.* v. 4. 286. *Wild.* n. 60. *Ait.* n. 45. Forks. *Egypt.-Arab.* 139.—Heads ovate, on axillary flanks, longer than the leaves. Calyx hairy; teeth awl-shaped, unequal. Stem erect. Floral leaves opposite. *Leaflets* elliptic-lanceolate, with shallow teeth. —Native of *Egypt.* The root is annual. Stem a foot or more in height, nacked in the lower half, round, fracted, smooth. *Leaflets* uniform, an inch or inch and half long, somewhat downy, about the length of the common flanks. *Stipulas* oblong, veiny, with green leafy awl-shaped points, of their own length. The lowest leaves only are opposite, one of them embracing the flower-flank, the other the main stem, which rises six inches above it, bearing many alternate leaves, and perhaps more flowers. *Heads* solitary, near an inch long. *Corolla* monopetalous, white; *standard* linear, obtuse, longer than the wings, which are marked by a small prominent calloheit at their base. *Stigma* downy towards the standard.

Fork'fill says, this is the Trefoil universally cultivated in *Egypt,* being the bell, and indeed the principal fodder for cattle in that country. It is fown only at the reeds of the Nile; and where the fields are too high to be inundated by that river, they are watered by means of hydraulic engines, the seeds being committed to the earth while it is wet. The produce is three separate crops, the plants growing each time about half an ell in height, and there are three months between each harvest. After the half they die. The first crop is the bell. When the Trefoil is wanted for feed, it is fown with the wheat. Both are gathered at once, by the hand, not reaped or mown, and are threlched out together, the Trefoil feed being afterwards separated by a sieve. Our British agriculturists do not appear to know any thing of this species of Clover, which being so important in its own country, might be worth trying, at least, in this. We beg leave to recommend it to their notice. The plant was introduced at Kew, in 1798, by Mr. Hadoo, and we trust its progeny has been continued. For the occupiers of low oozy lands in the fen it promises most benefit, provided the Egyptian mode of culture be the most eligible.

71. *T. suffruticum.* Suffocated Trefoil. *Linn.* Mant. 276. *Wild.* n. 61. *Fl.* Brit. n. 13. *Engl.* Bot. t. 1049. *Tr.* of *Linn.* Soc. v. 2. 357. *Jacq.* Hort. *Vind.* v. 1. 24. t. 60.—Heads sessile, lateral, roundish, nearly smooth. Calyx-teeth lanceolate, acute, recurved, longer than the corolla.—Found in the loose blowing fand of the sea-coasts of Sicily and England, flowering in June and July. Mr. Wigg firm discovered and afermented it near Yarmouth. Others have met with the plant, along the coasts, from that place to Landguard fort. This little annual *species* is more truly subterraneous than our n. 29, the *flens* and flowers being often buried entirely in dry sand, the leaves only peeping above the surface, so that the species might well remain in obscurity. In smoothness and general habit it comes so near to *gloeratum,* n. 65, that we have somewhat doubted its being more than a variety, caused by peculiarity of situation. But the calyx-teeth are lanceolate, by no means heart-shaped, and extend considerably beyond the corolla, which is closed so as to protect the organs of impregnation, which perform their functions under the dry sand. To provide against accident, each *legume* has two *seeds,* both of which are often perfected. The *petals,* naturally rose-coloured, are rendered whithish by the excision of light. The *corolla* tubes are broad. *Leaflets* wedge-shaped, finely toothed, smooth.

72. *T. uniflorum.* Dwarf White Trefoil. *Linn.* Sp. Pl. 1885. Ameon. *Acad.* v. 4. 285. *Wild.* n. 62. *Sm.* Fl. *Gras. Sib.* t. 752, unpubl. (T. vernalis repens, *flore alsè exiguis*; Buxb. Cent. 3. 18. t. 31. f. 2. *Melilotus* cretis humilissima humifusa, *flore albo magnico*; *Tourn.* Cor. 28. *Spica* triloba; *Alpin.* Fast. 169. t. 168.)—Stems much shorter than the footstalks, defunctified. Stalks single-flowered, aggregate, shorter than the points of the *stipulas.* *Tube* of the calyx longer than its awl-shaped teeth. —Native of *Syria,* *Arabia,* and the neighbourhood of *Constantinople.* Dr. *Sibthorp* observed it on the loftiest mountains of *Creta,* as well as in *Lemnos,* *Greece,* and *Afia Minor.* The root is perennia. Stems several, most like those of *T. caespitosa,* n. 21, in their defunctified position, but still shorter, closely invested with sheathing membranous *stipulas,* whose long, green, awl-shaped points extend beyond the axillary *flower-flanks.* The latter, a quarter or half an inch long, grow usually three together, from one common base, attended by very minute *bracteas,* each of them bearing a large white *flower,* full an inch long, whose *calyx* is tubular, ten-ribbed, nearly smooth, with rather unequal hairy teeth, half the length of the tube, having curved points. *Standard* broadish, erect, marginate, longer than the *wings* or *keel.* *Footstalks* twice as long as the *flowers,* measuring full two inches, slightly hairy. *Leaflets* broadly obovate, smoothish, strongly ribbed, with fine, sharp, partly hooked, marginal teeth. It is very probable this species may have several *seeds* in each *legume,* and may belong to the second section. This point we want materials to determine.

Sec. 4. *VESICARIA.* *Calyx* inflated, swelling after flowering.

73. *T. spumosum.* Bladdery Trefoil. *Linn.* Sp. Pl. 1885. *Wild.* n. 63. *Ait.* n. 47. *Sm.* Fl. *Gras. Sib.* t. 753, unpubl. (T. caule nudo, *gloeratum gallabris,* &c.; *Bauh.* Hift. v. 2. 379, bid. )—Heads ovate. Calys of the fruit ovate, tumid, smooth, with bristle-shaped recurved teeth. *Bracteas* membranous, lanceolate. Stem and branches erect.—Native of *Languedoc,* Italy, and *Cyprus,* in cultivated fields. Root annual. Stems numerous, spreading, a span high, leafy, branched, smooth like the whole plant, which has the general aspect of our common *purple* *Clover,* though totally different when examined. *Footstalks* from two to four inches long. *Leaflets* obovate, fracted, toothed, marked with white. *Stipulas* pale, membranous, ovate, taper-pointed, entire. *Heads* solitary, terminal, ovate or roundish. *Corolla* long and slender, crimson, with a white tube; *standard* ovato-lanceolate, erect, entire. *Calyx* tubular, membrane, five-coloured, very smooth, with five nearly equal, green, slender, spreading teeth, one-third the length of the tube. As the *fruit* advances, the tube becomes inflated, obliquely elliptical, with many red ribs, connected by fine reticulations; the teeth rather unequal, and recurved; the *corolla* remaining dry and hardened in the mouth of the calyx, and invelling the *legume,* which
which is four-seeded, furnished with a long prominent beak. Each flower has a narrow lanceolate bract; befits the five broader ones under the head. The latter are said to be wanting in T. turgidum, Bieberl. Taur. v. 2. 216, which is perhaps a variety, with paler flowers.


75. T. refusinatum. Reversed, or Salamanca, Trefoil. Linn. Sp. Pl. 1086. Willd. n. 64. Ait. n. 48. (T. foliiculatum, five vesica rum, minus purpureum; Bauh. Hift. 379. T. praenfe foliiculatum, flore invero; Barcel. l. c. v. i. 73. n. 824. t. 872.)—Heads roundish. Flowers reversed. Calyx of the fruit inflated, oblong, membranous, reticulated, downy, with two terminal spinous teeth. Stems prostrate.—Native of Germany, Flanders, Italy, all Greece, and the Archipelago, flowering in the spring. A smooth annual plant, much agreeing in habit with our English glomeratum, but larger, and the lateral heads of little crimson flowers are supported by longish stalks. Each flower is turned on its back. The heads in seed are twice as large, being then near an inch broad. Calyx of the fruit much enlarged, split lengthwise, pale green, beautifully reticulated with strong veins, terminating in two teeth only, and besprinkled with short twaity hairs. Leaves two-seeded. Leaflets obovate, ribbed, serrated. Stipulas short, abrupt, with lanceolate teeth. We presume T. bicorne, Fork. Egypt.-Arab. 139, can hardly be different from the present species.

76. T. tomentosum. Woolly Ball Trefoil. Linn. Sp. Pl. 1086. Willd. n. 65. Ait. n. 49. (T. fragiferum; Rivin. Tetrap. Irr. t. 10. f. 2. T. fragiferum tomentosum; Magn. Monsp. 265. t. 264. T. germerulis tomen tofis per caulium longitudinem; Bauh. Hift. v. 2. 379.)—Heads globoso. Calyx of the fruit inflated, globoso, membranous, reticulated, denfooly woolly, with two minute terminal teeth. Stems prostrate.—Native of the south of France, as well as of Spain, Portugal, Barbary, Greece, and the Levant. Cultivated by Parkinson, before 1640. Ait. Root perennial. Stems numerous, from two to six inches long, branched, prostrate, but not creeping. Leaflets obovate, smooth, obtuse, nearly ribbed, bordered with minutely spinous teeth. Stipulas ovato-lanceolate, pointed. Heads lateral, stalked, shorter than the leaves and footstalks, hemispherical while in flower, in which flate the tube of the calyx very smooth, with three teeth, on the under side; gibbous and wooly on the upper, with two teeth. As the fruit ripens, each head becomes an aggregate ball, half an inch in diameter, of globular, crowded, denfooly woolly calyces, exquisitely reticulated with pink veins. Nothing can be more distinct from the leaf, yet their specific characters are not easy to define in a striking manner. Linnaeus justly remarks, that this species comes nearer to refusinatum, with which its corolla agrees, than to fragiferum, which it so much resembles in fruitt. Some copies of Rivinus want the figure above cited, which was added to the plate after its first publication.

77. T. fragiferum. Strawberry-headed Trefoil. Linn. Sp. Pl. 1086. Willd. n. 66. Fl. Brit. n. 14. Engl. Bot. t. 1050. Curt. Lond. f. f. 2. t. 55. Fl. Dan. t. 1042. Ger. Em. 1208. (T. fragiferum, folio oblongo; Vaill. Paris. t. 22. f. 2.)—Heads roundish, on stalks much longer than the leaves. Calyx of the fruit inflated, globoso, membranous, reticulated, nearly smooth, with two awl-shaped, terminal, curved teeth. Stems creeping.—Native of low moilt pastures or heaths, especially by rivers, in a black boggy foil, throughout Europe, from Sweden to Greece, and in Alia Minor, flowering in summer. Root perennial. Herbage to like T. repens as to be easily con founded therewith, except that the heads of flowers are smaller, and most generally pink; though oftenest white in Sweden. Stipulas lanceolate, large, acute, white and membranous, with green veins. The heads, when perfecting fruit, strikingly resemble a hautbois strawbery, in fize and colour, being larger than those of the last species, nearly smooth, and more richly coloured with red and green. The two spinous points of the calyx are also far more considerable. Legume with two feets. This Trefoil is eaten by cattle, but its crop is late, and of trifling amount.

78. T. physodes. Bladder-headed Trefoil. Bieberl. Taur. v. 2. 217.—"Heads roundish. Calyx of the fruit inflated, membranous, downy, with five nearly equal bristle shaped teeth, as long as the tube. Flower-stalks as long as the leaves. Stems procumbent, very smooth."—Native of Georgia. Chev. de Steven. Refembles the last, but is a distinct species. Stems scarcely taking root, long and slender, very smooth, not clothed with scattered spreading hairs as in T. fragiferum, any more than the footstalks and flower-stalks. Stipulas narrower, with a longer point. Leaflets larger, and of a brighter green. Flower-stalks shorter. Flowers with partial stalks a line in length, which render the head less denfe. Calysx-teeth all nearly equal, resembling the two terminal teeth of the last. Corolla redder; with a longer and narrower standard. Such is the description of the author quoted. The calyx-teeth appear to us to afford the most decided specific distinction. T. humens of the same writer is probably, as he suspects, only a more slender variety of his physodes, with longer stalks, smaller heads, and fewer flowers; but especially smaller calyx-teeth.

s. 5. Lupinula. Standards of the flowers inflamed.

79. T. montanum. White Mountain Trefoil. Linn. Sp. Pl. 1087. Willd. n. 67. Ait. n. 51. Bieberl. Taur. v. 2. 218. (T. folio longiore, flore albo; Rivin. Tetrap. Irr. t. 12. f. 2. T. pratense album; Fuchh. Hift. 818. l. c. 472. T. majus primum; Cluf. Hift. v. 2. 245. T. majus flore albo; Ger. Em. 1185.)—Spikes roundish. Standard awl-shaped, withering. Stem erect. Leaflets elliptical, with bristly teeth.—Native of dry mountainous pastures, in Germany, Switzerland, Savoy, and Crete, flowering in August. Dr. Pitcairn is said to have imported it in 1786. The root is woody and perennial. Stems about a foot high, filky as well as the foot stalks. Lower leaflets broadest and obtuse; upper more lanceolate and very acute; all smooth above, light green, nearly ribbed. Heads stalked, at first hemispherical, but from the drooping of the lowermost flowers, as they fade, soon becoming elliptical, and near an inch long. Corolla white. Tube of the calyx pale, hairy about the top only; teeth about as long, awl-shaped, erect, rather unequal, remaining uncharged. The standard, like the other petals, does indeed remain in a dried hardened flate, but scarcely more than in T. hybridum, repens, &c. to which the present species is so nearly related in every other respect, and so little like the rest of this section, that we could with to remove it from hence, we were not Linnaeus and every other author against us.

80. T. speciosum. Purple and Yellow Trefoil. Zant Hay. Willd. n. 68. Ait. n. 52. Sm. Fl. Græc. Sibth. t. 754, unpubl. (T. creticum elegantiflimum, magnpo flore; Tourn. Cor. 27.)—Spikes hemispherical. Standard kidney shaped, toothed as well as the wings. Stems zigzag, decumbent,
TRIFOLIUM.

decumbent.—Found wild on the mountains of Crete, and in the
isles of Cyprus and Zanz. Mr. Hawkins observed this
beautiful Trefoil as the only plant made hay in the
latter country. It might perhaps be tried with advantage
in the dry open parts of the south of England. The
root is annual, if we may judge by appearances. 
Herbage rather
fuscent, nearly smooth. Stems spreading in every
direction, much branched, purplish, about a foot high, but by
culture they would certainly become more luxuriant.
Leaflets obovate, toothed, emarginate. Stipulas lanceolate.
Heads numerous, above an inch broad, on axillary 
flakes, longer than the leaves. Calyx smooth or-hairy, its tube
very short, and two upper teeth not longer; three lower
(Wildenow erroneously says the upper) thrice as long,
though shorter than the claws of the petioles. Standard of a
dull but elegant lilac hue, strongly ribbed, sharply toothed,
withering and permanent, turning brown as it fades.
Wings and keel yellow, shorter, the latter very small.
The flowers are not reverted. Wildenow was milled by a 
dried specimen.
Dickfl. Dr. Pl. n. 80. Ehrh. Herb. n. 29. Fl. Dan.
t. 558. (T. aureum; Pollich Palat. v. 2. 344. T. mo-
tanum lupinum; Baulh. Prodr. 140. Lotus montanus
auraeus, anlro lupuli capitae, annuus; Barrel. Ic. t. 1024,
excellent.)—Heads oval, nearly globular. Standard ellipti-
cal, deflexed, entire. Calyx-teeth linear-awhlshed,
elongated, unequal, smooth. Leaflets all equally feehle.
Stem erect.—Native of Sweden, Germany, Switzerland,
Savoy, Greece, Crete, and Asia Minor, but not of England;
generally in woods and copsipes, in hilly or alpine situations,
flowering in July and August. Root annual. Stems from
four to twelve or fifteen inches high, scarcely branched.
Leaflets obvate-oblong, more or less toothed, ribbed,
shorter than their common flalk. Stipulas ovato-lanceolate.
Heads one, two, or three, full as big as the hal, about
the top of the stem, on longish, stout, angular, hairy flalks.
Corolla of a bright golden yellow, large, flowering,
turning brown by age or drying only; standard furrowed, infixed.
Tube of the calyx short, bottle-shaped, smooth as well as the
teeth, which are all more or less elongated, though the two
uppermoft are shorter. Legume small, elliptical, 
ingleeeded. See the next species.
Pl. 1087. Wildl. n. 70. Ait. n. 53. Curt. Mag. t. 557.
Ehrh. Herb. n. 19.—Heads oval, nearly cylindrical. Stand-
ard elliptical, deflexed, entire. Three lower calyx-teeth
awhlshed, hairy; two upper oblonge, or very short. 
Leaflets all equally fellele. Stem erect.—Native of Sweden, in
mountainous meadows at Gottfurd, near Upfal, and other
places, but rarely. Linnaeus. Whether it be found also
in Germany, we are not certain; but whatever has been tak-
enn for this species in other parts of Europe, we have aconsterned
to be the foregoing, to which all its synonyms, except the
above, belong; even, probably, Lupinum montanum, capitulis
spadiceis; Ruppi. Gen. 248. ed. 2. 256. The excellent figure
in Curtis is therefore a great acquisition. Indeed the syn-
onyms of agrarium, cited by Linnaeus, are wrong. T. agra-
rarium of Dodoens, Pamp. 576, is actually Medicago lupu-
lina! Yet hence the specific name, a very inapplicable one,
was taken. T. spadiceum, sent to Kew by M. Thouin in 1778,
is a hardy annual, flowering in July and August. It differs
very decidedly from the hal, in being a smaller more flender
plant, though equally upright. The heads in particular are
but half the fize of that species, or if sometimes nearly as
long, they are much more flender and cylindrical. The flowers,
though at first yellow, soon change to a peculiarly rich dark
nuft-colour, and are essentially distinguished by the very
small upper teeth of their calyx, as well as the long brifly
hairs which clothe the lower ones.
Fl. Suec. ed. 2. 261. Wildl. n. 71. Fl. Brit. n. 15. 792,
Lond. fabe. 3. t. 45. Mart. Ruft. t. 121. T. lupinum;
Rivin. Tetrap. Irr. t. 10. f. 1. T. pratense luteum, capi-
tulo Lupuli, vel agrarium; Rau Syn. 330. Melothius, qui
Trifolium pratense luteum, capitulo Lupuli, vel agrarium;
Vail. Paril. t. 22. f. 3.)—Heads oval, many-flowered.
Common footstalk elongated in the lower part.—Native of
dry gravelly pastures and fields throughout Europe, from
Sweden to Greece and Asia Minor, as also in North America,
flowering in June and July. This is one of three common
annual procumbent species, with yellow flowers, all of
which have been confounded, in some respect or other, by Lin-
naeus and his discipies, and for the right understanding of which
we acknowledge ourselves obliged to the Rev. Dr. Becke,
now dean of Britfol, see Engl. Bot. t. 18. Before the pub-
ication of Fl. Brit. v. 1 and 2, the present plant was taken,
by all British botanists, for the Linnaean agrarium, n. 81.
From that it differs in being much smaller, with procumbent
branching flalks, which are only occasionally supported by
neighbouring plants, or a little ascending at the end. From
the two following it differs in having oval, many-flowered heads,
which assume in fading a hop-like aspect; but they have
never the shining bronzed hue of the real agrarium, though
the standard, like that, is furrowed. The leaflets are obvate,
emarginate, toothed, smooth, slightly glaucous; their com-
mon footstalk much longer below the fide leaflets than beyond
them, the odd leaflet being sometimes nearly feehle. Stipulas
half-ovate, acute, ribbed, entire, often fringed, branches and
flower-flalks more or less hairy, especially upward. Heads
at most half an inch long. Calyx-teeth unequal, but variable.
Corolla lemon-coloured, changing to a light, tawny brown;
the standard rounded, strongly furrowed. Legume small,
eliptical, pointed, with one feed. Professer Martyn recom-
ends this species to the notice of the agriculturist. Cattle
are fond of it, but the crop will probably not be so abundant
as the Noneuch, or Medicago lupulina.
n. 55. (T. filiforine ß; Fl. Brit. 793. T. silifolle; Ehrh.
Herb. n. 49. T. procumbens; Hudf. 328. Curt. Lond.
fabe. 3. t. 53. T. lupinum alternum minus; Rau Syn. 330.
t. 14. f. 3. T. luteum minimum; Ger. Em. 1186.)—Heads
hemipherical. Flower-flalks straight and rigid. Standard
nearly smooth. Stems prostrate. Common footflalk very short
below the leaflets.—Very frequent in dry gravelly pastures,
of England, Germany, and Switzerland, flowering in June
and July. Root small, annual, often furnished with the little
fleshy knobs. Stems but little branched, from fix to twenty-
four inches long; most succulent and brittle in the large
variety, Engl. Bot. t. 1, which Dr. Becke recommends as
likely to prove a moft valuable plant, for cultivation in upland
pastures, being highly acceptable to cows and sheep. The
central leaflet is elevated on a much more considerable partial
flalk than in the foregoing or the following species; while
the common footflalk, though variable, is in general remark-
ably short. Leaflets obvate and emarginate, or obcordate,
ferrated. Flowers from twelve to fifteen only, pale yel-
low, making a little hemipherical head, and all finally de-
flexed. Standard scarcely wrinkled or furrowed. Legume
obvate,
TRI

obovate, obtuse. *Seeds* rarely more than one in each legume. *Calyx-teeth* very unequal, taper, hairy. Linnaeus confounded this with the preceding, as appears by his herbarium. Others have thought it not distinct from the following; but we trust both those mistakes are now sufficiently cleared up.

85. *T. filiforme.* Slender Yellow Trefoil. Linn. Sp. Pl. 1088. Fl. Suec. ed. 2, 261. Wildl. n. 72. Fl. Brit. 1404. Engl. Bot. t. 1257. (T. lupulinum minimum; Dill. in Rauh. Syn. 331. t. 14. f. 4.)—Heads lax, of few flowers. *Flowers* capitate, wavy. Standard fimbroid. Stems prostrate. Leaflets all nearly sessile.—Native of rather moist gravelly pastures, among short grass, in Scania, as well as in England, flowering in June and July. Annual, like the last, but usually more prostrate, and much smaller, discoverable chiefly by its little yellow heads of *flowers,* entangled by their capillary *flanks,* among the radical leaves of short grass, on grass-plats, where the soil, though gravelly or sandy, is somewhat moist, and prone to bear mofs. The *stems* are about a finger's length, numerous, slender, and branched. *Leaflets* narrow, nearly or quite sessile, on a short common *flxors.* *Flowers* from three to eight, dropping, each on a very slender, though elongated, partial *flank,* and all leaning toward one side. *Calyx* quite smooth; its teeth less remarkably disportioned than in *T. minus.* *Legume* obovate, sometimes two-seeded, scarcely covered by the withered pale-brown *corolla,* whole standard is not at all furrowed.—Sometimes the fruit of this species exceeds that of the smaller variety of the last; but if the above characters be attended to, no confusion can arise.

For *T. biflorum,* Linn. Sp. Pl. 1088, and *T. guianense,* Aubl. Guian. t. 399, see *Stylasanthus,* n. 4 and 5.

Linnaeus, at the end of this genus, classes the various species according to their inflorescence, whether racemose, umbellate, fasciculate, capitate, or spicate; which serves to show the impropriety of any generic character derived from thence.

TRIFORIUM, the gallery which usually goes round a church of the pointed style, over the sfe-aflies, so called by Germain and other ancient writers.

TRIFORMIS, in *Mythology,* an epithet given to *Diana,* which see.

TRIGA, in *Antiquity,* a kind of car, or chariot, with three horfes.

The triga, in reality, was only drawn by two horses; so that it was properly a biga; but it had, besides, a third horse tied to the others, like a led horse, for change. Status calls the third horse, *equus fanalis*; Hedisius, *exanops,* and Dionysius Halicarnassus, *leucops.*

We do not find the triga on any ancient monument; but it was a long time in use among the Romans, at their *ludi Cirienfes.* The Greeks, who first introduced it, soon abandoned it.

TRIGAL, in *Geography,* a town of Prussia, in Natangen; 9 miles S. of Lick.

TRIGAMY, a third marriage; or the state of a person who hath been married three times.

In the ancient church, trigamy was only allowed to such as had no children by their former marriages.

If, having children by one or both the former, they married again, after forty years of age, they were excluded from communion for five years. If they were only forty years old, the penance was but four years. See BIGNY.

TRIGAULT, NICOLAS, in *Biography,* a Jefuit missionary, was born at Douay in 1577, and having entered into the Society of Jesus, was sent, in 1616, on a mission to the East Indies. After a year's residence in China, he came to Europe for a recruit of missionaries, and returned with forty-four associates. At length his life and labours terminated at Nanking in 1628. Of his works, which were numerous, we shall only mention his treatise entitled "De Christiana Expeditione ad Sinas ex Matthei Ricci Commentariis," 1615, 4to. This work, composed from the memoirs of Ricci, contains a description of the manners, laws, and customs of the empire of China, with an account of the acts of the Jefuits in that country. "A Chinese Dictionary," 3 vols. printed in China. Moreri.

TRIGEMINI NERVI, in *Anatomy,* the nerves of the fifth pair of the head. See NERVE.

TRIGINTAL. See TRENATAL.

TRIGLIA, or GURNAU, in *Ichthyology,* a genus of fish of the order of the Thoracici; the characters of which are, that the head is large, mailed, and marked by rough lines; the eyes large and round at the vertex; the mouth large; the palate and mandibles armed with sharpened teeth; and the nostrils double; the aperture of the branchial or gills large; the gill-cover spinous, and the gill-membrane seven-rayed; the body covered with scales, wedge-formed; the back straight, with a longitudinal furrow on both sides spinous; the lateral line near the back, straight; the abdomen thick, the ventral and pectoral fins large, and, in some species, near the pectoral fins are finger-shaped processes.

Species.

CATAPHRACTA; Red Gurnard. With double fingers; forked elongated snout, and octagonal mailed body; its length is about twelve inches; the longitudinal rows or divisions of the body are marked by as many ferrated or aculeated lines; beneath the throat is a pair of ramified cirti; the pectoral fins and tail are pale-brown; the other fins pale-yellow, and nearly transparent; rays of the first dorsal fin running out beyond the membrane. A native of the Mediterranean.

LYRA; Red Gurnard. Silvery beneath, with triple fingers, and bifid denticulated snout. This is the Piper of the British Zoology. Its length is from one to two feet or more; its lateral line formed of small scales; its scales are small, pectoral fins large, slightly tinged with dull blue; tail of like colour; the other fins yellowish, with red rays. Native of the European seas, and considered as an excellent fish for the table.

GURNARDUS; Grey Gurnard. With triple fingers, and lateral line mailed with rounded whitish scales; length the fame as that of the former: colour above dark grey, with blackish and red spots, beneath silver; scales small, lateral line strongly marked with a series of larger, rounded, whitish scales, with a dusky central spot. Native of the European seas, and not uncommon about our own coasts, feeding on worms, insects, &c.

CUCELIUS; Red Cuckow Gurnard. Silvery beneath, with triple fingers, and first dorsal fin marked by a black spot; an elegant species, about a foot in length, of a more slender shape than the last; colour on the upper parts a beautiful red, more or less distinctly marked by whitish transverse bars; scales extremely small; lateral line composed of pointed white scales edged with black, and a similar row on each side of the back; fins transparent; the first dorsal marked on the edge by a black spot, the second tinged near its edge with yellow. Native of the European seas, and esteemed as a food.

LUCERNA. With triple fingers, sub-bifid snout, and lateral line bifid at the tail. Native of the Northern seas, and conjectured to be a variety of *T. hirundo.*

HIRUNDO; Grey-brown Gurnard. Silvery beneath, with triple fingers, and very large olivaceous pectoral fins spotted with
with blue: the Sapphiric gurnard of the British Zoology; and stock-fish of Willughby. Of the same size with the grey gurnard; scales middle-sized, lateral line rough, pectoral fins very large, of a violaceous olive, sometimes richly edged and spotted with blue. Native of the European seas, occasionally springing out of the water to some distance by means of its large pectoral fins.

**Lineata; Red Gurnard.** Marked above by dusky-fangtune spots, with the body crosscd on each side by numerous perpendicular lines; the streaked gurnard of the British Zoology. Size and habit of T. cuculus; colour bright-red, abdomen silvery; on each side of the back, close to the base of the dorsal fins, a row of broad, serrated, short prociples of a yellow colour; lateral line formed by a row of similar ones; scales small, fides above and below the lateral line marked into very numerous, narrow perpendicular divisions; pectoral fins large, rounded, of a dusky-brown, spotted with black; rest of the fins yellowish, with a tinge of red, especially the tail, which is slightly lunate. Native of the Mediterranean sea.

**Asiatica; Silvery Gurnard.** With quadruple fingers; body smooth, finot smooth and prominent; anterior gill-covers ferrated; pectoral fins falcated. Native of the Indian seas.

**Evolans; Springing Gurnard.** With triple fingers, and three ferrated spines between the dorsal fins; allied to the T. volitans, but furnished with three separate pectoral processes; the pectoral fins very large, but less than those of the next species; the pectoral fins blackish. Native of the American seas.

**Volitans; Red Gurnard.** With aculeated scales, very large pectoral fins spotted with blue, and fextuple fingers connected by a membrane; the Milia de Salvian, Aldrovandus, Willughby, &c. This is a highly singular and beautiful species; length about twelve inches; colour crimson above, pale or whitish beneath; head blunt, armed on each side with two very strong large spines, pointing backwards; the whole body covered with very strong carinated and sharp-pointed scales, hardly separable; first dorsal fin pale violet, croffed with deeper lines, and at its origin two separate rays longer than the rest; second dorsal fin pale, with the rays barred by brown; pectoral fins very large, transparent, of an olive-green, richly varied with numerous bright-blue spots, fix pectoral processes, not separa, but united, and appearing like a small fin on each side of the thorax; tail pale violet, with the rays croffed by dusky spots, and strengthened on each side of the base by two obliquely tranverfe bony ribs or bars. Native of the Mediterranean, Atlantic, and Indian seas, where it swims in shoals, and is often seen flying out of the water to a considerable distance.

**Japonica, or Alata; the Japanece Gurnard.** With eleven fingers on each side, palmed by a membrane. About four inches in length; head angular; lower jaw and hinder margin of the gill-covers furnished with two strong spines. Native of the Japanece sea.

**Adriatica.** With the body verticillated by scales, with aculeated lateral line; pectoral fins black beneath, and triple fingers; supposred to be a variety of T. lineata, and differing from it by being varied with bands of black spots, and having the spots of the pectoral fins disposed into two tranverfe bands, the edges being marked beneath by a row of blue spots. Observed in the Adriatic sea.

**Minuta.** With triple fingers, and biccarnated back. A small species: head hard and rough, emarginated and denticulated in front, and furnished with two spines above the eyes; posterior gill-covers spiny; pectoral and ventral fins very sharp-pointed; tail rounded. Native of the Indian seas.

**Carolina; Whitish Gurnard.** Speckled with red, with triple fingers, and brown pectoral fins transversely banded with black; length about ten inches; dorsal fins pale orange spotted with brown; the first fin marked by a black spot; tail slightly rounded at the end, and crofled by three or four rows of brown spots. Native of the American seas.

**Cavillone; Red Gurnard.** With a single spine above each eye, and fix on each side of the back of the head. Length about three inches; body covered with small, denticulated, rough scales; colour red; pectoral fins white above, and dark-green or olive beneath. Native of the Mediterranean, and known on the French coasts by the appellation of Cavillone.

**Punctata; Roe-red Gurnard.** With blood-red speckles, and broad obfute head, spined on the hind-part. Length about eight inches; head broad, obfute, and furnished behind with strong spines; scales middle-sized; pectoral fins very large, rounded, and of a dusky-blue colour, speckled with red, and inclining to yellow towards their tips; rest of the fins and tail yellow speckled with red. Native of the American seas.

**Pint; Red Gurnard.** With triple fingers, and body marked on each side by numerous tranverse convex lines. Similar in habit to that of T. piper, but in other respects much allied to T. lineata; colour red, with yellowish abdomen; scales small; dorsal and lateral line aculeated, from which pafs perpendicular convex lines terminating rather obtusely above and below, and bearing some resemblance to pine-leaves; fins and tail yellowish; ventral fins red, with an obscure blueish tinge. Native region unknown.

**Charonterea; With the body mailed beneath, and red fins.** Allied to the T. cataphracta, but differing by not having the body marked into an octagonal form; the under parts only being furnished with bony divisions; above the front are several spines pointing backwards: and above and below the tail are also placed three spines: all the fins, except the tail, are of a bright red. Native of the Mediterranean. Shaw’s Zoology, vol. iv. pt. 2.

**Triga, in Mythology, the name of a divinity among the Germans with three heads, which was undoubtedly Diana Trivia, or Hecate.

**TRIGLAND, James, in Biography, a learned theologian, was born at Harelem in 1657, and educated at the universities of Harderwyk and Leyden, where he diligently studied the Oriental languages. He became a candidate for the ministry in 1676, and having exercised it for some time at different places, he at length settled at Leyden, where, in 1686, he was made professor of theology, to which was afterwards added the office of explaining Hebrew antiquities. He was twice nominated rector of the university by William prince of Orange, by whom he was greatly esteemed. He died in 1705. His erudition was profound, and his works, on literary and theological subjects, various. Morei.


Gen. Ch. *Cal.* Perianth inferior, of three roundish, obtuse, concave, deciduous leaves. *Cor.* Petals three, ovate, concave, obtuse, similar to the calyx. *Stam.* Filaments fix, very short; anthers at the back of the filaments, shorter than the corolla. *Pist.* German superior, large; styles none; stigmas three or fix, reflexed, feathery. *Perc.* Capsule ovate-oblhq, obtuse, with as many cells as there are stigmas, bursting at the base, with acute valves. *Seeds* solitary, oblong, erect.

Obi. Garten and Brown, perhaps more justly, consider the fruit as an assemblage of three or fix single-seeded capsules, without valves. *Analogy* confirms this opinion.


3. *T. mexicanum*. Mexican Arrow-grafs. Kunth Nov. Gen. and Sp. v. 1. 244.—Capsules of fix cells. Spike very long. Leaves cylindrical. Root tuberous.—Native of moist exposed situations in New Spain, flowering in January. *Root* perennial, oblong, horizontal, the thickened of a fawn’s quill, very densely clothed with the rudiments (rather probably the remains) of leaves. All the leaves are radical, linear, narrow, blunter, smooth, two or three inches long, spreading at the base. *Stalk* erect, round, smooth, fix or eight inches high, including its cluster, which measures half as much. *Stamens* fix. Stigmas red. Two or three of the cells, or *capsules,* are generally abortive. _Kunth._


9. *T. mucronatum*. Pointed-fruit or Arrow-grafs. Brown n. 4.—"Capsules somewhat turbinate; the points of their three perfect cells divaricated; three abortive ones like partitions. Leaves nearly cylindrical. Spike of few flowers."—Gathered by Mr. Brown, without flowers, on the southern coast of New Holland.

**TRIGLOCHINE,** in Anatomy, a synonym of the triguspin valve. See *Tricuspis.*

**TRIGLYPSIS,** formed from τριγωμος, g. d. three engravings, from γραφω, sculpio, in Architecture, a sort of ornaments repeated at equal intervals in the Doric firece. Each triglyph consists of two entire gutters, or channels, cut to a right angle, called *glyps,* and separated by three interludes, called by Vitruvius *femora,* from each other, as well as from two other half-channels which are at the sides.

The ordinary proportion of triglyphs, is to be a module broad, and one and a half high. But this proportion, M. le Clerc observes, sometimes occasions ill-proportioned intercolumnations in the porticoes, for which reason he chooses to accommodate the proportion of his triglyphs to that of the intercolumnation.

The intervals between the triglyphs are called *metopes.*

—Under the channels, or glyps, are placed guttae, or drops.

The triglyphs make the most distinguishing character of the Doric order. Some imagine them originally intended for the conveyance of the gutta that are underneath them: others fancy they bear some resemblance to a lyre, and thence conjecture the ornament to have been originally invented for some temple faced to Apollo. See *Doric.*

**TRICLYPS,** Capital of a. See *CAPITAL.*

**TRIGLYPTON,** in *Ancient Geography,* a town of Italy, on the other side of the Ganges, in the country called Randa-marcotta.

**TRIGNO,** in *Geography,* a river of Naples, which runs into the Adriatic, 12 miles N.W. of Termoli.

**TRIGOLO,** a town of Italy, in the department of the Upper Po; 5 miles S.E. of Crema.

**TRIGON, TRIGONUS,** formed from τριγωμος, triangle, in *Geometry,* a triangle.

**TRIGON,** in *Astronomy.* See *TRIPEDILY.*

**TRIGON,** in *Astronomy,* denotes an aspect of two planets, wherein they are 120 degrees distant from each other: this is called also *trine.*
The trigons of Mars and Saturn are by astrologers held malicious aspects.

**Trigon, Trigonum,** was also a musical instrument, used among the ancients. The trigon was a kind of triangular lyre, or harp, and was invented by Pythagoras.

It was used at feasts, and played on by women, who thrum it either with a quill, or beat it with small rods of different lengths and weights, to occasion a diversity in the sounds. See **Trigonum.**

**Trigon or Triangle of Signs,** is the name of an instrument used for drawing the arcs of the signs upon dials: it may be made of brass or any other solid matter, and of any size at pleasure. This instrument is constructed after the following manner: first draw the line $a b$ (Plate XXI. Astronomy, fig. 5) representing the axis of the world, and $a c$ perpendicular to it, representing the radius of the equinoctial; and about the point $a$ describe the circular arc $d e f$ at pleasure. Then reckon $23^1/2$ both ways from the point $e$ upon the said arc for the sun's greatest declination, and draw the two lines $a d$, $a e$, for the summer and winter tropics; likewise draw the line $d f$, which will be bisected by the radius of the equinoctial in $q$; about which point, as a centre, draw a circle, whose circumference passes through the points $d$ and $e$ of the tropics, and divide the circumference into $12$ equal parts, beginning from $d$: through each point of division equally distant from $d$ and $e$, draw occult lines parallel to the radius of the equinoctial circle; these lines will intersect the arc $d e f$ in the points, through which and the centre $a$, lines being drawn, will represent the beginnings of the signs of the zodiac at $30^\circ$ distance from each other. But to divide the signs into every $10th$ or $5th$ degree, the circumference must be divided into thirty-six or forty-two equal parts. The characters of the signs are annexed as in the figure; and when the trigon is divided into every $10th$ or $5th$ degree, the letter of the month is placed to the first $10^\circ$ of each sign agreeing with it. However, this instrument may more readily be made by means of a table of the sun's declination; for having drawn the two lines $a b$ and $a c$ at right angles, lay the centre of a protractor on the point $a$, with its limb towards the point $c$; and keeping it fixed, count $23^1/2$ on both sides of the radius $a c$ for the tropics of $\varphi$ and $\varphi$, $20^\circ$ for the beginnings of the signs $\alpha$, $\beta$, $\gamma$, and $\delta$, and $11^\circ$ for $\varepsilon$, $\zeta$, $\eta$, and $\xi$. And thus the spaces for each sign may be graduated in every $10th$ and $5th$ degree by means of a table. The equinoctial points of $\gamma$ and $\omega$ are placed at the end of the radius of the equinoctial $a e$.

**Trigon of Diurnal and Nocturnal Arcs.** These are drawn upon fun-dials by curve-lines, like the arcs of the signs, and by means of them the shadow of the style shows how many hours the sun is above the horizon, in any given day, &c.

The trigon of signs is the same for all latitudes, the sun's declination being the same for the whole earth; but the diurnal arcs are different for every particular latitude, and as many of these arcs are drawn upon a dial, as there are hours of difference between the longest and shortest days of the year. For the construction of this fort of trigon, draw the right line $R Z$ (fig. 6) for the radius of the hour-line of $12$, or of the equinoctial: and about the point $R$, with any opening of the compasses at pleasure, describe the circular arc $T S V$, and lay off both ways on it from the point $S$ two arcs, $S V$, $S T$, each equal to the complement of the latitude. Then draw the right line $T X V$, and about the point $X$, as a centre, describe the circumference of a circle $T Z V Y$, which divide into forty-eight equal parts by dotted lines, drawn parallel to the radius of the equinoctial $R Z$; then these lines will intersect the diameter $T X V$ in points, through which and the point $R$ you may draw the radii of the hours. The angles which all the radii make at the point $R$ may be found trigonometrically by the following proportion: as radius is to the co-tangent of the latitude, $\phi$, so is the tangent of the difference between the semi diurnal arc at the time of the equinox, and the arc proposed to the tangent of the sun's required declination.

The trigon of signs may be annexed to a rule or index $A$ (fig. 7) in order to draw the arcs of the signs upon great dials. The diurnal arcs may be drawn likewise upon this trigon, but the arcs of the signs and diurnal too must not be drawn upon one and the same dial, for avoiding confusion. In the centre of the index there is a small hole, through which is put a pin, that the instrument may turn about the centre of a dial. The trigon slides along the index, and may be fixed in any part of it by means of the screw $B$. The arcs of the signs with their characters are round about the circumference, and there is a fine thread fixed in the centre, in order to extend over the radii quite to the half-lines of a dial.—For a farther account of these instruments and their use, see Bion's Contr. and Uso of Math. Infr. by Stone, p. 231, &c.

**TRIGONAL Leaf,** among Botanists. See Leaf.

**Trigonala Numbers.** See Triangular Numbers.


Gen. Ch. Cal. Pierian inferior, of one leaf, bell-shaped, divided half way down into five little, awl-shaped, nearly equal, teeth. Cor. papilionaceous, apparently tripetalous; standard nearly ovate, obtuse, reflexed and spreading; wings two, ovate-oblong, reflexed and spreading outwards, in such a manner that, with the standard, they almost constitute a regular tripetalous corolla; keel very short, obtuse, occupying the centre of the flower. Stam. Filaments in two distinct sets, one simple, one in nine segments, short, ascending; anthers simple, roundish. Pipf. German ovate-oblong, compressed; style simple, ascending; stigma simple. Peric. Legume linear-oblong, somewhat curved, compressed, much longer than the calyx, of one cell, and two valves. Seed numerous, roundish.

Eff. Ch. Standard and wings nearly equal, spreading, in the form of a tripetalous corolla. Stigma smooth. Legume of one cell, with many seeds, compressed, longer than the calyx.

Obi. Linneas remarks that the figure of the corolla alone stamps this as a distinct genus. We could with that character were more evident. The closest affinity exists between some Trigone, which we shall indicate, and the Medites, constituting the first section of Trifolium. See that article.

The species of this genus, seveventeen in Willdenow, are herbaceous, for the most part annual, strong-stemmed plants, with three leaflets on a stalk, and indeed the general habit of Trifolium. Their flowers are tufted rather than properly capitulate, usually yellow. T. Fianum gracccus has blueish flowers, which are quite seffile, or truly capitulate, their corolla that of a Trifolium, and their beaked legume splitting chiefly along its upper margin. This species certainly does not well accord with the rest.**
TRIGONELLA.

1. T. rubenica. Small, or Ruffian, Fenugreek. Linn. Sp. Pl. 1093. Willd. n. 1. Ait. n. 1; excluding the synonym of Gmelin, which Linnaeus subfrequently discovered to belong to Medicago falcata. (Lotus n. 156; Ainn. Ruth. 119, and Melilotus n. 159; ibid. 120.)—Legumes stalked, crowded, drooping, linear-lanceolate, straight. Leaflets lanceolate-obovate, abruptly divided by three terminal teeth.—Common throughout Siberia. A hardy perennial, flowering in June and July, sent by the Siberian botanist Amman, to Miller, before the year 1741. Herb nearly smooth. Stems numerous, spreading or decumbent, much branched; round, leafy. Leaves alternate, stalked, of three narrow, delicate leaflets, tapering and entire towards the base, toothed about the extremity; the odd one largest, an inch long, on an elongated partial stalk. Stapulas small, awn-headed. Flowers yellow within, purplish externally, in short, axillary, capitate clusters. Standard broad, almost orbicular. Calyx hairy, bell-shaped, with five lanceolate, rather unequal, teeth. Legume half an inch long, compressed, with four or five kidney-shaped seeds. We know of no figure of this species.


3. T. hybrida. Mule Fenugreek. Pourret in Act. Tolof. v. 3. 331. —Legumes stalked, rather crowded, pendulous, half-oval, compressed, reticulated with prominent veins. Stem diffuse. Leaflets roundish-obovate, nearly entire.—Native of the south of France. A specimen from the author cited this to be nearly related to the last; but the legume, though full-grown, is but one-third of an inch long, most elegantly marked with elevated reticulations. The leaves too are smaller, and scarcely toothed or wavy.

4. T. friata. Striated, or Abyssinian, Fenugreek. Linn. Suppl. 340. Willd. n. 3. —Legumes umbellate, linear, compressed, incurved, reticulated; their common stalk longer than the leaves. Leaflets wedge-shaped, toothed.—Native of Abyssinia, according to the herbarium of Linnaeus, who cultivated the plant at Upsal. Root annual. Stems square, diffuse. Leaflets half an inch long, ribbed, sharply toothed, as well as the stipulas. Flowers light yellow, about six in each long-stalked head, or umbel. Legumes an inch long, narrow, slightly hairy, with five or seven seeds.

5. T. pohycarta. Many-horned, or Spanish, Fenugreek. Linn. Sp. Pl. 1093. Willd. n. 4. Ait. n. 3. (Fenugrum graecum fylvicole; Ger. Em. 1196. Lob. 1c. v. 2. 45.) —Legumes nearly sessile, crowded, erect, nearly straight, longer than the leaves; the common stalk pointless.—Native of Spain, Italy, and the south of France. Cultivated here in the middle of the seventeenth century. Annual. Stem branched from the bottom, diffuse, twelve or eighteen inches long. Leaflets obovate, toothed. Flowers yellow, three or four together in little, axillary, almost sessile, heads. Calyx hairy, as well as the young leaves. Legumes three or four, an inch and half long, narrow, clothed with close hairs, and beautifully reticulated.

6. T. hamafol. Hooked Egyptian Fenugreek. Linn. Sp. Pl. 1094. Willd. n. 5. Ait. n. 4. Sm. Pl. Græc. Sibth. t. 764, unpubl. (Melilotus Egyptianus, Alchemich vocatus; Alpin. Egypt. 122. t. 124. Bauh. Hist. v. 2. 567.) —Legumes racemose, stalked, declining, recurved, nearly cylindrical, even, hairy; their common stalk spinous, longer than the leaf. —Native of Egypt, from whence the Linnaean specimen was brought by Hassell. Dr. Sibthorp met with it in Cyprus. A small, diffuse, annual, hairy herb, whose leaflets are wedge-shaped, strongly toothed, on a long common stalk. Flowers deep yellow, fragrant, in stalked clusters, half an inch long. Legumes an inch long, curved into a semicircle, quite delitlute of reticulations, both futures peculiarly dilated, pale and even; the sages green and very hairy. The seeds are said to be used by the Egyptians, in formenations, for all kinds of pains.

7. T. torta. Twisted Egyptian Fenugreek. —Legumes umbellate, cylindrical, twisted, reticulated; their common stalk much shorter than the leaves. Leaflets ineriously heart-shaped, toothed, obtusely ribbed.—Native of Egypt, from whence Dr. Delile favoured us with wild speciments, under the name of hamafol, but they do not agree with the Linnaean specimen, nor with the specific character, any more than with the figure in alpinus, as far as anything can be determined therefrom. The plant of Dr. Delile is as smooth as possible in every part. Its stems round, branched, firm, hardly a half inch. Leaves on long footstalks, rather flathy; leaflets all of equal size and shape, one-third of an inch long; the odd one on a stalk nearly its own length. Flowers yellow, drooping, five or six in each axillary umbel, whose stalk is not half the length of the adjoining common footstalk, and, after flowering, becomes very stout, round, and firm. Legumes drooping, rather more than half an inch long, rigid, pale, slightly twisted spirally, quite delitlute of hairs, but marked with peculiar oblong reticulations of elevated veins.

8. T. flexuosa. Zigzag Egyptian Fenugreek. Delile Aegypt. MSS.—Legumes in nearly sessile umbels, compressed, reticulated, zigzag. Leaflets ineriously heart-shaped, toothed, obtusely ribbed—Native of Egypt. A figure of this plant was defined, under the above name, for the great work on Egypt, but we have not heard that it has proceeded for far. This species very closely accords with the half in habit, and precisely in foliage, but the umbels are nearly sessile, flowers smaller, calyx-teeth longer and more pointed. The legumes are essentially different, not only in their compressed figure, but in being strongly folded, or plaited, as it were, into a zigzag position. If expanded, they might possibly equal the length of the half. Both appear to be annual, and probably grow prostrate.


11. T. armata. Thorny-branched Cape Fenugreek. Thunb. Prodr. 137. Willd. n. 8. —"Legumes lateral, hairy. Leaflets ovate, smooth. Branches becoming spinous."—Native also of the Cape.—We have no further information concerning the three last species.

12. T. spinosa. Thorny-stalked Fenugreek. Linn. Sp. Pl. 1094. Willd. n. 9. Ait. n. 5. (Fenugrum graecum var. spinosa; Ger. Em. 1196. Lob. 1c. v. 2. 45.) —Legumes sessile, crowded, erect, nearly straight, longer than the leaves; the common stalk pointless. Leaflets obovate, toothed. Flowers yellow, three or four together in little, axillary, almost sessile, heads. Calyx hairy, as well as the young leaves. Legumes three or four, an inch and half long, narrow, clothed with close hairs, and beautifully reticulated.
TRIGONELLA.

15. T. fiscata. Spiked Fenugreek. Sm. Prodr. Fl. Græc. Sibth. n. 1831. Fl. Græc. t. 763, unpublished.—Legumes spiked, pendulous, short, hairy, on a spinous-tipped axillary flalk, longer than the leaves. Stipulas awl-shaped, entire. —Gathered by Dr. Sibthorp in the isle of Seriphus. This is an annual species, with many fants, about a foot high, which partakes of the fame ambiguity, respecting the Melilots, as the foregoing. At leaf the shortness of the legume, and consequent small number of seeds, anwers beft to Trifolium. But we want certain information on this point, having not seen any ripe fruit. The habit of the plant, especially the spinous flower-flalk, belongs to Trigonelella. The leaves are half an inch in length, obovate-oblong, narrow, smooth, serrated. Flowers yellow, in crowded clusters resembling spikes, half an inch long, becoming afterwards twice that length, beft with the numerous reflexed beaks of the crowded pendulous legumes. The lowest tooth of the calyx is very shght; the four others long and awl-shaped.

16. T. parviflora. Small-flowered Fenugreek.—Legumes in capitulate clusters, ascending, linear-lanceolate, compressed, slightly curved, with about two seeds; their flalk as long as the leaves, pointed. Stem ascending. Stipulas ovate, pointed, toothed. —Found by M. Du Cros, in a meadow near the mill of Coinius, in Switzerland. The fants are a span high, decumbent at the base. Size and apect of the plant like T. monspeliaca, hereafter described, but some of its characters accord more with elatior, to which it has other- wise little resemblance. The flalks, calyx, legumes, and young leaves, are more or less silky. Leaves broadly ovate, the lower ones rather quadrangular, none more than half an inch long, most of them less; all toothed, ribbed, of a light green. Flowers very small, yellow, on partial flalks as long as themselves, collected into hemispherical silky heads. Calyx-teeth lanceolate, as long as the corolla, somewhat unequal. Legume half an inch long, curved upwards, veiny, constricted at each end, containing only one or two seeds. This species seems to have escaped the notice of all authors that have fallen in our way. It was sent for corniculata, but the legumes are totally different, and the flowers not a quarter so large, neither is the fants zigzag.

17. T. monspeliaca. Trailing Fenugreek. Linn. Sp. Pl. 1095. Willd. n. 11. Ait. n. 7. "Waldii et Kitaib. Hung. v. 2. 152. t. 142." Sm. Fl. Græc. Sibth. t. 765, unpublished. (Fenugrecum polyceraton; Rivin. Tetrap. Irr. t. 82. F. minus monspeliaca; Breyn. Cent. t. 33. f. 2. Securidaca genus triphyllon; Bauh. Hill. v. 2. 373.)—Legumes spreading, crowded, curved, compressed, hairy, obliquely veined, shorter than the leaves, on a very short pointed flalk. Stems prostrate. —Native of the south of France, Hungary, Switzerland, Greece, Cyprus, and Afia Minor. A hardy annual with us, sometimes cultivated for curiosity, flowering in June and July. Stems quite flat on the ground, hardly a span long, a little hairy, like the leaf of the plant. Leaves sharply toothed; their common flalks an inch long. Flowers deep yellow, twice the size of the leaf. Calyx hairy, with rather unequal teeth, scarcely half so long as the corolla. Legumes declining, not an inch in length, prettily marked with oblique transverse ribs, and clothed with featttered clofe hairs. Seeds several, rough.

18. T. glabra. Smooth Cape Fenugreek. Thunb. Prodr. 137. Willd. n. 12. —"Legumes umbellate, reflexed, smooth. Leaflets ovate, smooth, toothed."—Found by Thunberg, at the Cape of Good Hope. We have not seen
seen this plant. If the leaflets be really ovate, not obovate, it is a very remarkable species indeed.


20. T. laciniata. Jagged Fenugreek. Linn. Sp. Pl. 1095. Wild. n. 14. (Melilotus aegyptius annus, folis elegantè incisè; Lippi MSS.) —Legumes stalked, somewhat umbellate, elliptical, reticulated. Leaflets wedge-shaped, toothed. Stipulas laciniated. The Linnaean specimen of this rare species was sent by Burman, with the above synonym, by which we learn that it was gathered in Egypt by Lippi, who did not live to publish his discoveries. (See Litt. Ph.) This is a slender, delicate, smooth, apparently decumbent, plant, resembling Medicago laciniata. The stems are about six inches long, unbranched, angular. Leaflets a quarter of an inch long, abrupt, ribbed, very deeply and sharply toothed at the end. Stipulas palmate, acute. Flower-flanks axillary, shorter than the footflanks, tipped with a small point. Flowers from three to five, yellow. Calyx pale, slightly hairy, with awl-shaped teeth of its own length. Legume twice the length of the calyx, minutely reticulated, rather hairy, acute at each end. 21. T. pinnatifida. Pinnatifid Fenugreek. Cavcn. Ic. v. 1. t. 26. t. 38. Wild. n. 15. Ait. n. 8.—Legumes nearly sessile, axillary, linear, compressed, two or three together. Leaflets pinnatifid. Stipulas toothed. —Native of the borders of fields about Madrid, flowering in May. Its seeds were brought from thence to Kew, by the late marchioness of Bute. "This little annual species is closely related to the last, being of the same size, with several quadrangular stems. But the leaflets are more oblong, and deeply pinnatifid, not merely cut about the extremity. Flowers from three to five in the bosom of each leaf, on very short stalks, pale yellow. Calyx like the leaf. The legumes, as Cavunilles observes, are totally different, an inch or more in length, very narrow, slightly curved, with many seeds. Only two or three legumes seem to be perfected, though the flowers are described as rather more numerous. 22. T. Fenugraceum. Common Fenugreek. Linn. Sp. Pl. 1095. Wild. n. 16. Ait. n. 9. Woody. Med. Bot. t. 158. Sm. Fl. Grce. Sibth. t. 766, unpublished. (Fenugraceum; Camer. Epit. 199. Ger. Em. 1196. f. 1. Fenuagraceum; Rivin. Tetr. Irr. t. 81. Fenugraceum; Fuch. Hilt. 798. Matth. Valgr. v. 1. 374.) —Legumes axillary, sessile, oblong, compressed, hairy, with an oblique, awl-shaped beak. Stems spreading. Stipulas ovate, entire. —Native of the south of Europe. Dr. Sibthorp found it plentifully on the shores of Ais Minor, as well as in Rhodes and Cyprus; more sparingly on mount Hymettus near Athens. It has long been cultivated for the sake of its seeds, which from the days of Dioscorides have been thought cooling and detergent. Their scent is very powerful, resembling Mellilot; which renders them disagreeable in fomentations and cataplasmata, the only uses for which they have been retained in the apothecaries' shops. They are now nearly exploded. (See Fenugreek.) This herbage is used in some European countries for fodder. The root is annual. Stems various in luxuriance and direction, from one to two feet long, reddish, flout, leafy and hairy. Leaflets inerferly heart-shaped, various in size from a quarter of an inch to an inch, moistly smooth, of a deep, rather glaucous, green, more or less toothed. Flower-flanks hairy, rather longer than the leaflets. Flowers two or three, axillary, sessile, yellow, white, or pale blue; standard an inch long, emarginate, crect; veins and keel much shorter, by no means answering to the generic character. Calyx hairy, with awl-shaped, nearly equal, teeth. Legume, in a wild state, about an inch long, very, a quarter of an inch broad, tapering into an oblique beak, longer than itself, but very various in that respect; in the cultivated plant, the length of the legume, containing above a dozen seeds, greatly exceeds that of the beak. Dr. F. Buchanan, in his Journey through the Mysores, v. 1. 374. relates, that this herb, known by the name of Menteca, when cultivated in gardens is always used green. When grown for the feed, as grain, the ground is plowed twice at the same place, seafon, and divided into plots like a kitchen-garden. The seed is fown, covered by hand, and according to the nature of the soil, and watered once in ten or fifteen days. "The ripe feed," says this author, "fells very high, and is reckoned the most delicate kind of pulse. The young leaves are used as greens, and the unripe legumes put into Curries." We find these seeds are one ingredient in the receipts for Curry powder, communicated from India. T. gladiata, Bieberl. Taur. v. 2. 222, must be premised a variety of the species before us.

23. T. indica. Indian Fenugreek. Linn. Sp. Pl. 1095. Wild. n. 17. Ait. n. 100. (Lotus madraspatanus, villosus, ornithopodii silquâ singulari; Pluk. Phyt. t. 200. f. 71, faulty, as representing the legumes terminal.—Legumes linear, nearly sessile, mostly solitary, slightly curved, much longer than the leaves. Leaflets entire. Stem diffuse. —Native of the East Indies, from whence its seeds were sent by Dr. Roxburgh to Kew, in 1793. An annual flowe plant, flowering in July and August. The whole herb is minutely hairy, or silky. Stems a foot long, round, branched. Leaflets obvate, narrow, three-quarters of an inch long, all equally nearly sessile, on a flatile of their own length. Flowers small, yellow or reddish, drooping, on very short stalks, usually two together, from the foboms of the leaves. Calyx-teeth lanceolate, leafy. Legumes an inch and a quarter or an inch and a half long, compressed, narrow, pale, hairy, with many seeds. We should have fupposed the seeds of this species to have made an ingredient in the Curry powders of India; but we find nothing of this kind recorded, nor is the plant mentioned in the admirable work of Dr. Buchanan, cited under the last species.
TRI

sheath, separate above, some of them often abortive, and the common sheath finally splits into two; anthers oblong, *P. amplexicaule*. Superior ovate, minute; style short, ascending; stigma capitate, flat, with a membranous border. Capsule oblong, acute, with three angles and three intermediate channels, of one cell and three valves, which are boat-shaped, double, the outer coat coriaceous, inner membranous, lined with wool. Seeds numerous, roundish, enveloped in long wool, and connected with a triple thread-shaped receptacle.


1. T. villosa. Villous Trigonia. Aubl. 388. t. 149. Willd. n. 1. — Leaves oblong, downy and hoary beneath. Native of Guiana, growing chiefly by way of fides, in cultivated grounds, or in the borders of groves and thickets, bearing flowers and fruit at various seasons. The stem is shrubby, with twining branches, supporting themselves upon neighbouring trees, round, downy and leafy. Leaves opposite, falked, entire, three inches long and one and a half broad, venous. *Sipularia* ovate, in pairs, deciduous. Clusters compound, terminal. Flowers aggregate, small, yellow, with a red keel. Fruit three inches, or more, in length, clothed with reddish down, splitting from the base.

2. T. leiis. Smooth Trigonia. Aubl. 390. t. 150. Willd. n. 2. — Leaves elliptical, smooth and shining on both sides. — Found on the banks of a rivulet, near the base of the hill of Courou, in Guiana. The branches of this species are smooth, but twine round any thing in their way, like the preceding. Leaves only one and a half or two inches long, oval, entire, on fhortith stalks. Clusters several at the ends of the branches, accompanied by some leaves. Flowers opposite, accompanied by small bracteas, white, with yellow anthers. Fruit about an inch long, greenish, rather rough to the touch. Seeds enveloped in soft white wool. Nothing is mentioned of any useful properties in either of these plants.

TRIGONIS, so called by Jacquin, because each of its petals forms an inverted isosceles triangle. See *Cupania*.

TRIGONOMETER, ARMILLARY. See Armillary Trigonometer.

TRIGONOMETRY, from τριγώνω, triangle, and μετρητω, measure, signifies literally the measure of triangles; but it is used here to denote that science which relates to the determination of the fides and angles of triangles, from certain parts which are given. When it is applied to the solution of plane triangles, it is called plane trigonometry; and its application to spherical triangles, is called spherical trigonometry.

Trigonometry, from its numerous and important uses, may be considered as one of the most interesting branches of the pure mathematics: practical and physical astronomy, navigation, surveying, geodesia, mechanics, in short nearly every branch of the pure and mixed mathematics, with the exception of geometry and arithmetic, are either wholly or in part connected with the principles of trigonometry; and we accordingly find that the improvements in this department have kept pace with, or rather perhaps have preceded, those which modern authors have introduced into all the other branches of the exact sciences: in fact, the trigonometry of the Greeks, and that of the moderns, which immediately followed the invention of logarithms, and, lastly, the analytical form given to it by Euler, Lagrange, &c. exhibit the same science under three very distinct characters, of which it will be proper to give a short sketch as an introduction to the present article.

It is very uncertain at what time trigonometry first began to be cultivated as a science, no records having yet been discovered which enable us to trace it to a higher age than that of Hipparchus, who flourished about 150 years before Chrilt, and who, as we are informed by Theon, wrote a work, in twelve books, on the chords of circular arcs, which, from the nature of the title, must have been a treatise on trigonometry; but the earliest work extant on this subject is the Spheres of Thodofius, in which the several propositions are demonstrated after the manner of Euclid; and the next in order to this, is a work by Menelaus, who flourished about the middle of the first century of the Christian era, and who is said to have written nine books on this subject; but of which, only three have been transmitted down to our times. The fix that are lost consisted principally of tables and the nature of their construction, which if we pollieled them would, in all probability, be rather matters of curiosity than of real utility. The earliest tables of trigonometry, of any importance, that we possess of the ancients, are those given by Ptolemy in his Almagest, in which he adopts the sexagesimal division of the radius, and of the arc whose chord is equal to radius, and then establishes all the other arcs by 60ths of that arc, and all the other chords by 60ths of that chord. From the time of Ptolemy, we from about the beginning of the second century, nothing of importance, except what we owe to Theon, was added to the science of trigonometry, till about the close of the eighth century after Chrilt, when the ancient method of computing by chords was changed for that of sines, an alteration first introduced by the Arabsians, to whom we are also indebted for several axioms and theorems which are at present considered as the foundation of modern trigonometry; but they still continued the sexagesimal division; and in this state it remained till Purbach, about the middle of the 15th century, constructed a table of sines to the division of the radius into 600,000 equal parts, and computed them for every ten minutes of the quadrant; and afterwards Regiomontanus, the disciple and friend of Purbach, carried the computation to every minute, dividing the radius into 1,000,000. He also enriched this science with many new theorems and precepts, which, except for the use of logarithms, render the trigonometry of this author little inferior to that of our times.

Soon after the period here mentioned, several other mathematicians also contributed to the advancement of this science, either by some useful alterations in the form of the tables, or by other improvements; amongst whom we may mention, as the most distinguished, Werner, Copernicus, Rheinold and Maurolycus: but the most complete work which had yet appeared, was published by Vieta in 1579; and some other tracts on the same subject and due to the fame author were published by Schooten in 1646.

The first part of the work to which we have above alluded, was entitled "Canon Mathematicus seu ad Triangulam, cum Appendicibus," in which there is given a table of fides, tangents, and secants for every minute of the quadrant to radius 100,000, with their differences; and towards the end of the quadrant, the tangents and secants are extended to eight or nine places of figures. They are also arranged after the manner of our modern tables, increasing from the right-hand side to 45°, and then returning backwards from the right-hand to 90°, so that each number and its complement stand upon the same line.

The second part, entitled "Univeralium infcriptionum ad canonem mathematicum," contains, besides a regular account
count of the construction of the tables, a compendious treatise on plane and spherical trigonometry, with their application to a variety of curious subjects in geometry and menursion, and other branches of mathematics; as also a number of particulars relating to the quadrature of the circle, the duplication of the cube, and similar problems, which are all treated of in a manner worthy of the genius of their author. The tract published by Schooten likewise contains many curious theorems due to Viete, particularly those relating to what the author calls angular sections; viz. to the multiples and submultiples of arcs; and general formulae for the chords and consequently for the sines of the sums and differences of arcs; and of such as are in arithmetical progression, which have since been so extensively and usefully applied, both in this science and in some of the higher branches of analysis. See Arithmetie of Sines.

The next writer on this subject, deferving of particular notice, was Reticus, who formed the design of computing the trigonometrical canon for every ten seconds of the quadrant to fifteen places of figures; and although he did not execute the whole of this laborious enterprise, he nevertheless accomplished that part of it which related to the sines and cofines, all of which he calculated according to his original plan; besides those of every single second for the first and last degrees of the quadrant; but was deterred from publishing the table on account of the expense attending the impession. The work, however, was afterwards completed and published by his disciple and friend Otho, under the title of "Opus Palatinum de Triangulis" (folio 1596); but it was found to contain many errors, which were afterwards corrected by Piticus, and the whole published under the new title of "Thefaurus Mathematicus, &c." (folio 1613).

The Trigonometry of the same author, which was published in 1599, is also a very complete work, and was long considered, both with respect to its tables and its numerous practical applications, as the most commodious and useful treatise on the subject then extant.

We might here enumerate many other writers of this period, who distinguished themselves either by their computation of new tables, or by their inventions of theorems; but the discovery of the use of logarithms, which happened about this time, produced a complete revolution in the method of treating this subject, and which therefore renders it unnecessary for us to enter into any minute explanation of the particular inventions and improvements of the authors to whom we have above alluded.

Amongst the earliest promoters of trigonometry, after the invention of logarithms, was Napier himself, to whom we are not only indebted for that admirable discovery, but also for the new and excellent analogies which he introduced into trigonometry, and which still bear his name, as likewise for the well-known rules called the five circular parts. (See Parts.) Our limits, however, will not allow of tracing the history of this science, through all its successive improvements, from the time of Napier to the present day; we shall therefore content ourselves with referring to the article Logarithm for an account of many of the most useful and valuable tables of the logarithmic kind, and shall merely mention Briggs as an author who contributed much to the advancement of this science, both by the affilience that he afforded to the practical calculator in many intricate and abstruse computations, and by the numerous improvements of a higher kind, with which his works abound. Other writers afterwards, either by the contraction of tables, or by the simplification of the rules and processes hitherto adopted, reduced the practice of trigonometrical operations to their simplest possible state, at least while it retained that geometrical form, which in the earlier stages of this science it naturally assumed. But about the middle or rather towards the close of the last century, trigonometry was again subjected to another complete revolution, by changing the geometrical form for the analytical one; and it is probable that to this change we are indebted for many of the most brilliant discoveries that of late years have enriched the two great branches of astronomic and science. The foundation of this method, however, may be traced to a much higher date than that to which we have above alluded; viz. to the time of Viete, whose theorems for the differences and sums, as also for the multiples and submultiples of the chords of arcs, which, although left without demonstration, and in the latter case probably formed by induction from the law of the terms and their coefficients, have nevertheless been the germ of most of the numerous and elegant formulae which have since enlarged and enriched this branch of the mathematics.

The exponential formula also for the sines and cosines of arcs, first given by de Moivre, greatly contributed to the progress of the analytical branch of this subject, by abbreviating its operations, and shortening the labour of investigation. See Arithmetie of Sines.

Having given this brief sketch of the history of trigonometry, it now remains for us to explain and illustrate its principles, and the various methods of applying it and of performing the requisite computation. With this view we shall commence with the definitions of all the terms which most frequently occur in this doctrine, in order to save the references which it would otherwise become necessary to make to the different articles in the body of the work.

In plane trigonometry, the circle is supposed to be divided into 360 equal parts, called degrees; every degree into 60 equal parts, called minutes; and every minute into 60 equal parts, called seconds; and so on into thirds, fourths, &c.; and the measure or quantity of an angle is estimated by the number of degrees, minutes, and seconds, contained in the arc by which it is bounded; the degrees being marked or denoted by a small °, the minutes by one dash, and the seconds by two dashes ′, &c.; thus, 70 degrees 16 minutes 17 seconds, is written 70° 16′ 17″.

It may be observed, however, that the division of the circle is perfectly arbitrary, and that any other number might have been employed instead of 360; and the sub-divisions might also have proceeded upon any other scale as well as the sexagesimal; and accordingly, the modern French mathematicians have adopted a different division; viz. they suppose the entire circle to be divided into 400 degrees, or each quadrant into 100 degrees; the next subdivision is the 10th of a degree, the next 100th, and so on; and hence the measure of an angle is expressed by them in the same manner as any other integral and decimal quantity, which notation is undoubtedly far superior to that in common use.

The complement of an arc or angle, is what it wants of 90°, or of a quadrant; and the supplement of an angle, is what it wants of 180°, or of a semicircle; thus, if an angle measures 50°, its complement is 40°, and its supplement 130°. As to the several lines made use of in this science, they will be readily understood by a reference to Plate II. Trigonometry, fig. 14. aided by the following definitions; viz.

The fine or right fine of an arc, is a line drawn from one extremity of an arc perpendicular to the diameter which passes through the other extremity: thus, B F is the fine of the arc A B, or of the supplemental arc B D E.

The verfed fine of an arc, is that part of the diameter which is intercepted between the arc and its fine: thus, A F is the verfed fine of the arc A B, and D F the verfed fine of the arc E D B.

The
The tangent of an arc, is a line touching the circle in one extremity of that arc, and continued thence to meet a line drawn from the centre through the other extremity of it, which last line is called the secant of the fame arc: thus, A H is the tangent, and C H the secant of the arc A B; also E I is the tangent, and C I the secant of the supplemental arc B D E; and this latter tangent and secant are equal to the former, but are accounted negative, as being drawn in an opposite or contrary direction to the former.

The co sine, cotangent, and cofe cante, of an arc, are the fine, tangent, and secant of the complement of that arc; the letters co. being only a contraction of the word complement.

Thus the arcs A B, B D, being the complement of each other, the fine, tangent, and secant of the one of these, is respectively the co sine, cotangent, and cofe cante of the other: thus,

\[ B F, \text{ the fin. of } A B, \text{ is the cof. of } B D. \]
\[ B K, \text{ the fin. of } B D, \text{ is the cof. of } A B. \]
\[ A H, \text{ the tan. of } A B, \text{ is the cotan. of } B D. \]
\[ D L, \text{ the tan. of } B D, \text{ is the cotan. of } A B. \]
\[ C H, \text{ the sec. of } A B, \text{ is the cofec. of } B D. \]
\[ C L, \text{ the sec. of } B D, \text{ is the cofec. of } A B. \]
\[ F A, \text{ the verf. of } A B, \text{ is the coverf. of } B D. \]
\[ D K, \text{ the verf. of } B D, \text{ is the coverf. of } A B. \]

The above arc the principal definitions relating to plane trigonometry, as far as regards the solution of plane triangles, which is that part of the subject to which we must more particularly confine our remarks in this article: what concerns the mutations or changes in the quantities above defined in paffing successively round the circumference, and their particular values at certain points, have been already explained under the article Arithmetic of Sines, to which the reader is referred. In every triangle there are fix parts; viz. three fides and three angles, any three of which being given (except the three angles), the other three may be found; and that either by geometrical construction, arithmetical or logarithmic computation, or by instrumental operation: that is, either by constructing the figure with the fides and a scale of chords, or other instrument for measuring angles; or by means of tables of natural or logarithmic fines, tangents, &c. in which the computation depends upon the propotionality of the fides of similar triangles; and lastly, by means of a Gunter or other scale constructed for this particular purpose, by which the results are obtained by the proper application of a pair of compasses to certain lines on the scale: in the present article, however, we shall only attempt an illustration of the second method.

There are only three distinct cases in trigonometry; viz.

1. When a fide and its opposite angle are two of the given parts.
2. When two fides and the included angle are given.
3. When the three fides are given.

Case 1.—When a fide and its opposite angle are two of the given parts.

As any one fide:
Is to any other fide::
So is the fine of the angle opposite to the former:
To the fine of the angle opposite to the latter.

This analogy supposes two fides and one angle to be given: if two angles and one fide be given, the order of the terms becomes,

As the fine of any angle:
Is to the fine of any other angle::
So is the fide opposite to the former:
To the fide opposite to the latter.

For let \( \triangle ABC \) (fig. 15.) represent any triangle; take \( A C, B C \), equal to each other, and let them represent the tabular radius; then \( a c, c b \), will also be the tabular fines of the angles \( A \) and \( B \). Now by similar triangles,

\[ \frac{AC}{BC} = \frac{AC}{BC} = \frac{AC}{BC} \]

Consequently, since \( A C = B C \), and the third terms being equal, we have

\[ \frac{AC}{BC} = \frac{BC}{AC} = \frac{AC}{BC} \]

or \[ \frac{AC}{BC} = \frac{AC}{BC} = \frac{AC}{BC} \]

Again, if the angles \( A \) and \( B \) were given, and the fide \( BC \); then,

\[ \sin A \times \sin B = \sin A \times \sin B = \sin A \times \sin B \]

or \[ \sin A \times \sin B = \sin A \times \sin B = \sin A \times \sin B \]

which is the fame as the theorem in words.

Hence in the triangle \( \triangle ABC \) (fig. 16.), let \( A B, BC, \) and the angle \( A \) be given; then it will be

\[ \frac{AC}{BC} = \frac{AC}{BC} = \frac{AC}{BC} \]

or log. \( \sin C = \log B A + \log A - \log B C \).

Again, if the angles \( A \) and \( B \) were given, and the fide \( BC \); then,

\[ \frac{AC}{BC} = \frac{AC}{BC} = \frac{AC}{BC} \]

or \[ \frac{AC}{BC} = \frac{AC}{BC} = \frac{AC}{BC} \]

It should be observed here, that the angle found by the firft of these analogies is ambiguous, or uncertain, viz. whether it be acute or obtufe, unless its magnitude be such as to prevent the ambiguity; for when this is not the cafe, there will be two different triangles, which have the fame three parts, but the other three different in each; and there is nothing in the abstract solution to determine which of the two is the required one; but in any practical cafe, there will be always found some circumstance or other to decide the question. This will be understood from fig. 17, where there are two triangles \( \triangle ABC \), \( \triangle ABC \); in each of which the fides \( A B, BC, \) or \( BC \), and the angle \( A \), are the fame; and, therefore, the angle \( C \), determined by the analogy, may be either \( BCA \) or \( BC A \), which are the supplements of each other, and which two angles, we have fewn in the definitions, have always the fame finite. The tabular fince, however, is always that belonging to the acute angle; and, therefore, when the obtufe angle is required, the acute angle must be fubtracted from \( 180^\circ \), which will be the obtufe angle. But if the angle be a right angle, or greater than a right angle, the acute angle found by the table must be the required angle; and, therefore, in this cafe, there is no ambiguity.

Let us propose, as an example, a triangle \( \triangle ABC \), in which the fide \( AB = 345 \), \( BC = 232 \), and angle \( A = 37^\circ 20' \).

First, to find the angle at \( C \).

As the fide \( BC = 232 \) \[ \begin{array}{c} 2.3654880 \\ \text{It to fide } AB = 345 \end{array} \]
\[ \text{So is } \sin A = 37^\circ 20' \]
\[ \text{To } \sin A = 37^\circ 20' \]

That is, by adding together the logarithms of the second and third terms, and subtracting the firft, we obtain the logarithmic value of the fine of \( C \), which is found in the table to answer to the angle \( 64^\circ 24' \). But we have feen that
an angle and its supplement have the same base; therefore, the
ine we have found may either answer to the angle 64° 24',
or to its supplement 115° 36'. This question, therefore,
involved in ambiguity to which we have above alluded;
and we must proceed to find the third side under each of the
values of the angle C, and the two corresponding values of the
angle B.

Since the sum of the three angles of a triangle = 180°,
\[\triangle ABC = \angle A + \angle B + \angle C = 180°\]

Hence, from the first values of the angles C and B, we have,
\[\angle A = 37° 20'\]
\[\angle C = 64° 24'\]

Again,
\[\angle A = 37° 20'\]
\[\angle C = 115° 36'\]

Hence, from the first values of the angles C and B, we have,
\[\angle A = 37° 20'\]
\[\angle C = 64° 24'\]

The sine and angles sought are, therefore, \(\triangle ABC = 37° 20'\),
or 174.07; and the angle \(B = 78° 16'\), or 27° 4'; and
angle \(C = 64° 24'\), or 115° 36'; either of which results
equally answer all the conditions of the original data. But
it is obvious, that if the given angle A had been a right
angle, or greater than a right angle, this ambiguity could
not have had place; because, in that case, the other two
angles are necessarily acute.

Cafe 2.—When two sides and their included angle are the
three given parts.

As the sum of the sides:
Is to the difference of the sides ::
So is the half sum of the required angles :
To the tangent of their half difference.

Then to half the sum add half the difference for the
greater angle, and subtract it for the less. The three angles
of the triangle being thus known, the required side may be
found by Cafe 1.

Note.—The half sum of the angles is found by subtracting
the given angle from 180°, and taking half the remainder;
or, instead of the tangent of the half sum, the cotangent
of half the given angle may be used, being the same thing.

Let \(\triangle ABC\) (fig. 18.) be any triangle; produce \(AB\),
making \(BE = BC\); also take \(BD = BC\); join \(DC\) and
\(CE\), and draw \(DF\) perpendicular to \(DC\). Now since
\(DB\), \(BC\), and \(BE\), are all equal to each other, a
semicircle described from the centre \(B\), and with the radius \(DB\),
would pass through \(D\), \(C\), and \(E\); consequently \(DCE\) is a
right angle, or \(CE\) is perpendicular to \(DC\), and is there-
fore parallel to \(DF\); and hence \(DF\) and \(EC\) are respect-
ively the tangents to the angles \(DCF\), and \(CDE\) to the
fame radius \(DC\). But \(CDE\) or \(CDB\) is half the sum
of the angles \(BAC\) and \(BCA\); for since \(DB = BC\),
the angle \(BDC\) is obviously = to the external angle
\(CBE\), which is equal to the sum of the angles \(A\) and \(C\);
therefore, \(CDB\) = = to half that sum, and \(DCF\) = half
the difference of the fame angles \(ABC\) and \(CAB\); for
\(ABC = BCD + DCA\), and consequently \(BAC =
BDC\), or \(BCD - DCA\); therefore \(DCA\) = half their
difference. Whence \(C\) = tangent of half the sum,
and \(DF\) the tangent of half the difference of the angles \(A\)
and \(C\); and it is evident from the construction that \(AE =\)
the sum of the sides, and \(AD =\) the difference of the
fame; consequently, since \(DF\) and \(CE\) are parallel, we have
\[AE : AD :: CE : DF;\]

demns the angle, and \(AB = BC\):
Is to the difference of the sides \(AB - BC ::
So is the tangent of half the sum of the angles \(A\) and \(C\):
To the tangent of half their difference.

Let us take as an example a triangle (fig. 19.), in which
the following dimensions are given, viz.

\[AB = 75, AC = 58, A = 108° 24';\]
then will \(AB = 75, AB = 75, A + B + C = 180° 0'\)
\[AC = 58, AB = 58, A = 108° 24';\]
\[BC = 73 36\]
\[\frac{1}{2}(B + C) = 35° 48'\]
\[\log. of A + B + C, 12238516\]
\[\log. of A - B, 1.32204489\]
\[\log. of \tan. \frac{1}{2}(B + C), 9.8586694\]
\[\log. of (C - B), -11.0837183\]
\[\log. of \tan. \frac{1}{2}(C - B), 8.9468667\]
\[\frac{1}{2}(C - B) = 5° 16', \frac{1}{2}(B + C) = 35° 48';\]
\[C = 41° 4', B = 30° 32';\]

If the other side \(CB\) were required, having found the
angles, it may be earlyly determined by the first cafe.

Cafe 3.—When the three sides of a triangle are given, to
find the three angles.

Assume any side of the triangle as a base (fig. 20.), and let
fall a perpendicular upon it from the opposite angle; then say,

As the base :
Is to the sum of the other two sides ::
So is the difference of the same sides :
To the difference of the segments of the base.

To the base or sum of the segments add the half difference
for the greater segment, and subtract it for the less.

The segments being thus found, the angles may be de-
termined by the first cafe. The demonstration is here very
obvious; for, by the 47th proposition of the first book of
Euclid,

\[AD^2 + DC^2 = AC^2;\]
\[BD^2 + DC^2 = BC^2;\]
TRIGONOMETRY.

therefore, \( AD^2 - BD^2 = AC^2 - BC^2 \);

consequently,

\[
AD + DB : AC + BC :: AC - BC : AD - DB;
\]

which is the same as the theorem in words.

As an example, let a triangle be proposed (fig. 21.), in which the three sides are as follow, \( \text{viz.} \)

\[
\begin{align*}
A &= 36, \quad AC = 45, \quad BC = 40 \\
A &= 45, \quad AC = 45, \quad AB = 36, \quad AB = 36
\end{align*}
\]

\[
\begin{align*}
AC + AB &= 81, \quad FC = 9 \\
\text{Log. of } BC &= 1.60226600 \\
\text{Log. of } AC + AB &= 1.90848500 \\
\text{Log. of } FC &= 0.95442500
\end{align*}
\]

\[
\text{Sum of log.} = 2.86272750
\]

Log. of \( CG = 1.26666750 \) The nearest corresponding number to which, in the tables, is 18.22

\[
\begin{align*}
BC &= 40.00, \quad EG = 10.89 \\
CG &= 18.22, \quad CG = 18.22
\end{align*}
\]

\[
\begin{align*}
BG &= 21.78, \quad CE = 29.11
\end{align*}
\]

\[
\begin{align*}
BE &= 10.89, \quad \text{Log. of } AB &= 1.55630250 \\
\text{Log. of whole sine} &= 10.00000000 \\
\text{Log. of } EB &= 1.03702790
\end{align*}
\]

Log. of \( \text{fin. of } EAB = 9.48072540 \) The corresponding number to which, in the tables, is 17° 36'.

\[
\begin{align*}
\text{Log. of } AC &= 1.65321250 \\
\text{Log. of the whole sine} &= 10.00000000 \\
\text{Log. of } CE &= 1.46404220
\end{align*}
\]

Log. of \( \text{fin. of } EAC = 9.81082970 \) To which the nearest corresponding number, in the tables, is 40° 18'; therefore \( A \) \( E \) \( C \) \( 45^\circ \) 42', and \( C \) \( A \) \( B \) \( 5^\circ \) \( 54' \).

The three preceding cases include all the possible varieties that can arise in the solution of plane triangles; but, under certain relations of the data, more simple operations may frequently be employed. Some of these solutions we shall investigate analytically at the conclusion of this article, and it will therefore be sufficient to point out in this place a few particulars relative to the solution of right-angled plane triangles.

In any right-angled triangle, any of the unknown parts may be found by the following proportions.

As radius:

Ist to either leg of the triangle:

So is the tangent of the adjacent angle:

To the opposite leg:

So is the secant of the same angle:

To the hypothenuse.

For \( A \) \( B \) (fig. 22.) being supposed the given leg, let \( AD \) represent the tabular radius, describe the arc \( DE \), and draw \( DF \) perpendicular to \( AD \); so shall \( DF \) represent the tabular tangent, and \( A \) \( F \) the tabular secant of the angle \( A \); and because of the parallels, \( A \) \( D \) \( A \) \( B \) :: \( A \) \( F \) :: \( A \) \( C \), which is the same as the theorem in words.

\[
\begin{align*}
\text{Whence } BC &= \frac{AB \times DF}{AD} = \frac{AB \times \tan A}{\text{rad.}} \\
AC &= \frac{AB \times AF}{AD} = \frac{AB \times \sec A}{\text{rad.}}
\end{align*}
\]

When the hypothenuse is given, each of the legs will represent, or have the ratio of, the sines of their opposite angles, the hypothenuse itself being assumed for the radius.

In this case, therefore, it will be

As radius:

Ist to the hypothenuse:

So is the sine of either acute angle:

To the opposite side.

That is, \( A \) \( E \) :: \( A \) \( C \) :: \( A \) \( G \) :: \( B \) \( C \);

\[
\begin{align*}
\text{rad.} : AC &= \sin A \cdot \frac{AC}{\text{rad.}} \\
\text{rad.} : AC &= \sin B \cdot \frac{AC}{\text{rad.}}
\end{align*}
\]

Note.—The radius is equal to the sine of 90°, or to the tangent of 45°.

The preceding theorems have been deduced from the geometrical properties of triangles and of their several parts; and they exhibit the simplest and most direct mode of solution that can be obtained generally for each case; but there are certain other forms of solution which are much more readily applied under particular relations of the data, which it will be proper now to consider, and in which we shall adopt the analytical mode of investigation instead of the geometrical one hitherto pursued.

Let \( A \) \( B \) \( C \) (Plate III. fig. 1.) be any plane triangle; \( C \) the vertical angle; \( C \) \( D \) a perpendicular let fall upon the base \( A \) \( B \); and let \( a, b, c, \) denote the sides respectively that are opposite to the angles \( A, B, C \).

Then because \( A \) \( C \) \( = b, A \) \( D \) is the cosine of \( A \) to that radius; consequently, when radius \( = 1, A \) \( D \) = \( b \) \text{cof. } A.

In like manner, \( B \) \( D \) = \( a \) \text{cof. } B; therefore \( A \) \( D \) + \( B \) \( D \) = \( A \) \( B \) = \( a \) \text{cof. } B + \text{bcof. } A.

If one of the angles, as \( A \), were obtuse, the result would still be the same; because, while on the one hand \( A \) would be negative, \( A \) \( D \), lying on the contrary side of \( A \) to what it does in the figure referred to, it must be deducted from \( B \) \( D \) to leave \( A \) \( B \); and a negative quantity subtracted, is equivalent to a positive quantity added; and by letting fall perpendiculars from the angles \( A \) and \( B \) upon the opposite sides, or upon their continuations, precisely analogous results will be obtained; and hence we derive immediately the following fundamental equations.

\[
\begin{align*}
a &= b \text{cof. } C + c \text{cof. } B \quad \left( \text{I.} \right) \\
b &= a \text{cof. } C + c \text{cof. } A \\
c &= a \text{cof. } B + b \text{cof. } A
\end{align*}
\]

Again, it is obvious, that in the same manner as we found \( A \) \( D \) = \( b \) \text{cof. } A, and \( D \) \( B \) = \( a \) \text{cof. } B, we might also obtain \( \text{DC} = b \) \text{fin. } A, and \( \text{DC} = a \) \text{fin. } B; therefore \( a \) \text{fin. } B = b \text{ fin. } A; \text{ whence also } \frac{a}{b} = \frac{\text{fin. } A}{\text{fin. } B}; \text{ and in like manner we have } \frac{a}{c} = \frac{\text{fin. } A}{\text{fin. } C} \text{ and } \frac{b}{c} = \frac{\text{fin. } B}{\text{fin. } C}. \text{ Or changing the denominators, the relations of all the six quantities may be thus expressed:}

\[
\begin{align*}
\frac{\text{fin. } A}{a} &= \frac{\text{fin. } B}{b} = \frac{\text{fin. } C}{c}
\end{align*}
\]

These
TRIGONOMETRY.

These formulae shew immediately the truth of our first theorem, viz. "the sides of plane triangles have the same ratio as the sines of their opposite angles."

Again, since \(a : b :: \sin A : \sin B\), we have \(a + b :: \sin A + \sin B; \) that is,

\[
\frac{a + b}{a - b} = \tan \frac{1}{2} (A + B).
\]

But \(\tan \frac{1}{2} (A + B) = \frac{a + b}{a - b} \cdot \tan \frac{1}{2} (A - B)
\]

See Arithmetic of Sines; consequently

\[
a + b = \tan \frac{1}{2} (A + B) \cdot a - b = \tan \frac{1}{2} (A - B)
\]

Or \(a + b : a - b :: \tan \frac{1}{2} (A + B) : \tan \frac{1}{2} (A - B)\);

that is, "the sum of the sides is to the difference of the sides, as the tangent of half the sum of the opposite angles is to the tangent of half the difference," which is our second theorem:

and other forms of solution are readily obtained from the two fundamental equations (I.) and (II.) viz.

\[
a = b \cos C + c \cos B
\]

\[
b = a \cos C + c \cos A
\]

\[
c = c \cos B + a \cos C
\]

For multiplying the first of these equations by \(a\), the second by \(b\), and the third by \(c\), and each of the equations thus obtained being taken from the sum of the other two, there will arise

\[
\begin{align*}
\frac{b^2 + c^2 - a^2}{2bc} &= \cos A \\
\frac{a^2 + c^2 - b^2}{2ac} &= \cos B \\
\frac{a^2 + b^2 - c^2}{2ab} &= \cos C
\end{align*}
\]

(III.)

\[
cos \frac{1}{2} A = \sqrt{\frac{1}{2} \left( \frac{a + b + c}{b} \right) - \left( \frac{a + b + c - a}{b} \right)}
\]

(VII.)

which is purely logarithmic: the \(\frac{1}{2} B\), and \(\frac{1}{2} C\), being precisely analogous to the above, are omitted.

And in a similar manner, we find

\[
\sin \frac{1}{2} A = \sqrt{\frac{1}{2} \left( \frac{a + b + c}{b} \right) - \left( \frac{a + b + c - a}{b} \right)}
\]

(VIII.)

\[
\tan \frac{1}{2} A = \sqrt{\frac{1}{2} \left( \frac{a + b + c}{b} \right) - \left( \frac{a + b + c - a}{b} \right)}
\]

(IX.)

Of these several rules for the determination of the sides and angles of plane triangles, we have before observed, that the formulae (IV.) and (V.) are best adapted to small integral values of the sides; and to real fractional values of the cosine, in other cases, one or other of the three latter will best apply. When the angle sought is very small, it is usually better to employ \(N^3\) (VIII.) than \(N^0\) (VII.) The method indicated in \(N^0\) (IX.) is commodious, and very correct, except when \(A\) is either very small or near 180°.

In some cases, where great accuracy is required, the operator may wish to obviate the uncertainties that would arise from the use of some of these formulae; for which purpose Dr. Maclise has given, in the Introduction to Taylor's Logarithms, the following rules in reference to the sines and tangents of very small arcs.

1. To find the Sine.—To the log. of the arc reduced into seconds, with the decimal annexed, add the constant quantity 4.6855749, and from the sum subtract one-third of the arithmetical complement of the log. cosine, and the remainder will be the log. sine of the given arc.

2. To find the Arc from the Sine.—To the given log. sine of a small arc, add 5.3144251, and one-third of the arithmetical complement of log. cosine; subtract 10 from the index of the sum, the remainder will be the logarithm of the number of seconds and decimals in the given arc.

3. To find the Tangent.—To the log. arc and the constant quantity 4.6855749, add two-thirds of the arithmetical complement of the log. cosine, and the sum is the log. tangent of the given arc.

4. To find the Arc from the Tangent.—To the log. tangent add 5.3144251, and from the sum subtract two-thirds of the arithmetical complement of log. cosine; take 10 from the index, and there will remain the logarithm of the number of seconds and decimals in the given arc.

Trigon—
TRIGONOMETRY.

TRIGONOMETRY, Spherical, relates to the resolution and calculation of the sides and angles of spherical triangles, which are formed by the intersection of three great circles of the sphere, and which, like plane triangles, consist of six parts, viz. three sides and three angles. See Spherical Triangle.

In plane trigonometry, any three of the six parts of a triangle being given, except the three angles, the other parts may be found; but in spherical trigonometry this exception has not place, for any three of the fix parts being given, the rest may thence be determined, the sides being measured or estimated by degrees, minutes, &c. the same as the angles.

Spherical trigonometry is divided into right-angled and oblique-angled, or the resolution of right and oblique-angled spherical triangles. When a spherical triangle has a right angle, it is called a right-angled spherical triangle; and when one of its sides is a quadrant, or 90°, it is called a quadrantal triangle.

The solution of all the cases of spherical trigonometry, although much more numerous than those in plane trigonometry, depends upon only three fundamental equations.

Theorem 1.—In any spherical triangle, the sines of the sides have the same ratio as the sines of their opposite angles.

Let O (fig. 2.) be the centre of the sphere, and having joined OA, OC, OB, draw AD perpendicular to the plane OBC; also make DE perpendicular to OB, and DF to OC; and join AE, AF.

Then, because AD is perpendicular to the plane OBC, each of the planes ADE, ADF, which passes through AD, will also be perpendicular to that plane; and hence ED is perpendicular to OB, and the plane ADE to the plane OBC, the line AE, which lies in the plane ADE, and is drawn from the same point E, is also perpendicular to OB.

Again, in like manner, because FD is perpendicular to OC, and the plane AFD to the plane OBC, the line FA, which lies in the plane AFD, and is drawn from the same point F, is perpendicular to OC; and, therefore, the angles AED and AFD, which measure the inclination of the planes AOB, AOC, will measure the angles CBA, BCA, of the spherical triangle ABC. Also, AF being perpendicular to OC, is the sine of the angle AOF, or of the arc AC; and AE, which is perpendicular to OB, is the sine of the angle AOB, or of the arc AB. But ADE, AFD, being right-angled plane triangles, right-angled at D, we shall have AD = AE sin. AED, and AD = AF sin. AFD.

Whence, by equality, AE sin. AED = AF sin. AFD; consequently

\[ A \cdot \sin. A \cdot \sin. AED :: A \cdot \sin. AED :: \sin. A \cdot \sin. B :: \sin. B \cdot \sin. C \]

\[ \sin. a \cdot \sin. b \cdot \sin. c \] (I)

Theorem 2.—In any spherical triangle,

As the rectangle of the sines of any two sides is to the radius ::

So is the rectangle of radius and the cofine of the other side, minus the rectangle of the cofines of the fame two sides:

To the cofine of the angle included by those sides.

For, having joined OA, OB, OC, (fig. 3.) draw FD in the plane OBC, and DE in the plane OAB, each perpendicular to their common section OB, and join EF. Then, because the angle EDF is the measure of the inclination of the planes OBC, OAB, it is also the measure of the spherical angle ABC or B. And because

\[ \text{cof. EDF} = \frac{DE^2 + DF^2 - EF^2}{2 DE \times DF}, \]

\[ \text{cof. EOF} = \frac{OE^2 + OF^2 - EF^2}{2 OE \times OF}, \]

\[ \text{EF}^2 = OE^2 + OF^2 - 2 OE \times OF \times \text{cof. EOF}. \]

See Form (V.) Plane Trigonometry.

And by substituting this in the first equation, \( \text{cof. EDF} = \frac{DE^2 + DF^2 - OE^2 - OF^2 + 2 OE \times OF \times \text{cof. EOF}}{2 DE \times DF} \)

But \( OE^2 - ED^2 \), and \( OF^2 - DF^2 \), are each equal to \( OD^2 \); whence \( \text{cof. EDF} \), or its equal,

\[ \text{cof. B} = \frac{OE \times OF \times \text{cof. EOF} - OD^2}{DE \times DF} \]

or

\[ \text{cof. B} = \frac{OE \times OF \times \text{cof. EOF} - OD^2}{DE \times DF} \]

\[ = \frac{1}{\sin. DOE}, \text{&c. if these values be substituted in the former} \]

\[ \text{equation, we shall have} \]

\[ \text{cof. B} = \frac{\text{cof. AC} - \text{cof. AB} \cdot \text{cof. BC}}{\sin. AB \cdot \sin. BC} \]

which necessarily involves the conditions given in the enunciation of the theorem.

Here again, affixing A, B, C, to denote the angles, and \( a, b, c \), the corresponding opposite sides, we deduce the following set of equations, \( \text{viz.} \)

\[ \text{cof.} a = \text{cof.} b \cdot \text{cof.} c + \sin. b \cdot \sin. c \cdot \text{cof.} A \]

\[ \text{cof.} b = \text{cof.} a \cdot \text{cof.} c + \sin. a \cdot \sin. c \cdot \text{cof.} B \]

\[ \text{cof.} c = \text{cof.} a \cdot \text{cof.} b + \sin. a \cdot \sin. b \cdot \text{cof. C} \] (II)

These equations will apply equally to the supplemental triangle; thus putting for the sides \( a, b, c \), \( 180^\circ - A', \ 180^\circ - B', \ 180^\circ - C' \); and for the angles \( A, B, C \), \( 180^\circ - a', \ 180^\circ - b', \ 180^\circ - c' \), we shall have

\[ - \text{cof.} A' = \text{cof.} B' \cdot \text{cof.} C' - \sin. B' \cdot \sin. C' \cdot \text{cof.} a' \]

And here, again, we have three symmetrical equations applying to any spherical triangles, \( \text{viz.} \)

\[ \text{cof.} A = \text{cof.} a \cdot \sin. B \cdot \sin. C - \text{cof.} B \cdot \sin. C \]

\[ \text{cof. B} = \text{cof.} b \cdot \sin. A \cdot \sin. C - \text{cof.} A \cdot \sin. C \]

\[ \text{cof. C} = \text{cof.} c \cdot \sin. A \cdot \sin. B - \text{cof.} A \cdot \sin. B \] (III)

Another important relation may also thence be readily deduced; for, substituting for the cof. \( b \) in the third of the equations \( N^0 (\text{II}) \) its value in the second; substituting also for \( \text{cof.} a' \), its value \( 1 - \text{fin.} a' \), and then striking out the common factor fin. \( a \), we shall have

\[ \text{cof.} c \cdot \sin. a = \text{fin.} c \cdot \text{cof.} a \cdot \text{cof.} B + \sin. b \cdot \text{cof. C} \]

But equation \( N^0 (\text{I}) \) gives \( \text{fin.} \cdot b = \frac{\text{fin.} \cdot B \cdot \text{fin.} c}{\text{fin.} C} \); and hence,
hence, by substitution,
\[
\text{cot} \cdot \sin a = \sin \cdot \text{cot} \cdot a \cdot \text{cot} \cdot B + \frac{\text{sin} \cdot B \cdot \text{cot} \cdot C \cdot \sin \cdot c}{\sin \cdot C}.
\]
Dividing by \( \sin \cdot c \), we have
\[
\frac{\text{cot} \cdot c}{\sin \cdot c} = \text{cot} \cdot a = \frac{\text{cot} \cdot a \cdot \text{cot} \cdot B + \frac{\text{sin} \cdot B \cdot \text{cot} \cdot C}{\sin \cdot C}}{\sin \cdot c}.
\]
But \( \text{cot} \cdot c = \cos \cdot c \). See Arithmetic of Sines.

Therefore, \( \text{cot} \cdot c \cdot \sin a = \cos \cdot a \cdot \cos \cdot B + \frac{\text{sin} \cdot B \cdot \cos \cdot C}{\sin \cdot C} \).
Thus, again, we get three symmetrical equations:
\[
\begin{align*}
\cos \cdot a \cdot \sin a &= \cos \cdot a \cdot \cos \cdot B + \frac{\text{sin} \cdot B \cdot \cos \cdot C}{\sin \cdot C} \tag{IV.} \\
\cos \cdot b \cdot \sin c &= \cos \cdot c \cdot \cos \cdot A + \frac{\text{sin} \cdot A \cdot \cos \cdot B}{\sin \cdot B} \tag{V.} \\
\cos \cdot c \cdot \sin a &= \cos \cdot a \cdot \cos \cdot B + \frac{\text{sin} \cdot B \cdot \cos \cdot C}{\sin \cdot C} \tag{VI.}
\end{align*}
\]

The classes of equations Nos. (I.) (II.) (III.) and (IV.) comprehend the whole of spherical trigonometry; or, in fact, Nos. (II.), from which all the others can be derived, may be regarded as comprehending the whole.
They require, however, some modifications to adapt them to logarithmic computations, which we shall now endeavour to illustrate.

I. Solution of right-angled spherical Triangles.—Let us suppose the angle \( A \) to be the right angle, then since \( \sin \cdot A = 1 \), \( \cos \cdot a \) (I.) gives
\[
\frac{\sin \cdot B}{\sin \cdot b} = \frac{\sin \cdot C}{\sin \cdot c} \tag{VII.}
\]
And upon the same hypothesis, \( \cos \cdot A = 0 \); so that Equation 1. Nos. (III.) becomes
\[
\begin{align*}
\cos \cdot a &= \cos \cdot B \cdot \cos \cdot C, \text{ or} \tag{VIII.} \\
\cos \cdot a &= \cos \cdot b \cdot \cos \cdot C
\end{align*}
\]
The Equations 2. and 3. of Nos. (III.) give also upon the same hypothesis, that is, angle \( A = 90^\circ \),
\[
\begin{align*}
\cos \cdot B &= \cos \cdot c \cdot \cos \cdot b \tag{IX.} \\
\cos \cdot C &= \cos \cdot b \cdot \cos \cdot c
\end{align*}
\]
And, lastly, from Nos. (IV.)
\[
\begin{align*}
\cos \cdot B &= \cos \cdot b \cdot \sin \cdot c \tag{X.} \\
\cos \cdot C &= \cos \cdot e \cdot \sin \cdot b
\end{align*}
\]
From these equations, by a few obvious transformations, the six usual cases of spherical right-angled triangles may be solved as follow.

Cafe 1.—Given the hypotenuse \( a \), and an angle \( B \), to find the other parts.

Here,
\[
\frac{\sin \cdot b}{\sin \cdot a} = \frac{\sin \cdot a}{\sin \cdot B} \tag{II.}
\]
or,
\[
\text{sin} \cdot b \cdot \text{sin} \cdot a = \sin \cdot a \cdot \sin \cdot B \tag{II.}
\]
Again, \( \sin \cdot e = \sin \cdot a \cdot \sin \cdot B \); or,
\[
\sin \cdot e = \sin \cdot a \cdot \sin \cdot B \tag{II.}
\]
Lastly, \( \cos \cdot C = \cos \cdot B \cdot \cos \cdot a \); or,
\[
\cos \cdot C = \cos \cdot B \cdot \cos \cdot a \tag{II.}
\]
In this case there can be nothing ambiguous, for in applying the first form, it is known that the angle and the opposite side are always of the same affection; and in the two latter, the rules for the change of lines in the different quadrants (see Arithmetic of Sines), will determine to which the result belongs.

Cafe 2.—Given the hypotenuse \( a \), and one of the sides, to find the other parts:
\[
\begin{align*}
\sin \cdot B &= \frac{\sin \cdot b}{\sin \cdot a} \text{ or } \sin \cdot \text{ang. req.} = \frac{\sin \cdot \text{giv. side}}{\sin \cdot \text{hyp.}} \tag{II.} \\
\sin \cdot c &= \frac{\cos \cdot a}{\cos \cdot b} \text{ or } \cos \cdot \text{side req.} = \frac{\cos \cdot \text{hyp.}}{\cos \cdot \text{giv. side}} \tag{II.} \\
\cos \cdot C &= \tan \cdot b \cdot \cos \cdot a \text{ or } \cos \cdot \text{ang. req.} = \tan \cdot \text{giv. side} \text{ and } \cos \cdot \text{hyp.} \tag{II.}
\end{align*}
\]

Cafe 3.—Given two sides, including the right angle, namely \( b \) and \( c \), to find the other parts.

Here,
\[
\cos \cdot a = \cos \cdot b \cdot \cos \cdot c \tag{II.}
\]
or,
\[
\cos \cdot \text{hyp.} = \text{rect. of } \cos \cdot \text{giv. sides.} \tag{II.}
\]
Again,
\[
\tan \cdot B = \frac{\tan \cdot b}{\tan \cdot a} \text{ and } \tan \cdot C = \frac{\tan \cdot c}{\tan \cdot a} \tag{II.}
\]
or,
\[
\tan \cdot \text{ang. req.} = \frac{\tan \cdot \text{opp. side}}{\tan \cdot \text{adj. side}} \tag{II.}
\]

Cafe 4.—Given a side \( c \), and its opposite angle \( B \), to find the other parts.

Here,
\[
\sin \cdot b = \sin \cdot a \cdot \sin \cdot B \tag{II.}
\]
or,
\[
\text{sin} \cdot \text{side req.} = \text{tan} \cdot \text{opp. side} \times \text{cot} \cdot \text{opp. ang.} \tag{II.}
\]
Lastly,
\[
\cos \cdot b = \cos \cdot a \cdot \cos \cdot B \tag{II.}
\]
or,
\[
\cos \cdot \text{ang. req.} = \cos \cdot \text{opp. side} \times \sin \cdot \text{giv. ang.} \tag{II.}
\]

Cafe 5.—Given a side \( a \), and its adjacent angle \( B \), to find the other parts.

Here,
\[
\tan \cdot b = \tan \cdot a \cdot \tan \cdot B \tag{II.}
\]
or,
\[
\text{tan} \cdot \text{side req.} = \text{tan} \cdot \text{opp. side} \times \sin \cdot \text{giv. ang.} \tag{II.}
\]
Again, \( \tan \cdot a = \frac{\tan \cdot b}{\cos \cdot B} \text{ or } \tan \cdot \text{hyp.} = \frac{\tan \cdot \text{giv. side}}{\cos \cdot \text{giv. ang.}} \tag{II.}
\]
or,
\[
\tan \cdot a = \cos \cdot B \cdot \tan \cdot B \tag{II.}
\]
That is,
\[
\cos \cdot \text{hyp.} = \cos \cdot \text{giv. ang.} \times \cot \cdot \text{giv. side.} \tag{II.}
\]
Lastly, \( \cos \cdot B = \cos \cdot a \cdot \cos \cdot C \); or,
\[
\cos \cdot \text{ang. req.} = \cos \cdot \text{opp. side} \times \sin \cdot \text{giv. ang.} \tag{II.}
\]

Cafe 6.—Given the two oblique angles \( B \) and \( C \), to find the right.

Here,
\[
\cos \cdot a = \cos \cdot B \cdot \cos \cdot C \tag{II.}
\]
or,
\[
\cos \cdot \text{hyp.} = \text{cot. of one side } \times \text{cot. of the other;} \tag{II.}
\]
or,
\[
\cos \cdot b = \cos \cdot a \cdot \cos \cdot \text{B} \tag{II.}
\]
or,
\[
\cos \cdot \text{req. side} = \frac{\cos \cdot \text{opp. ang.}}{\sin \cdot \text{adj. ang.}} \tag{II.}
\]

It may be proper to observe, that the rule of the signs, given under the article Arithmetic of Sines, will serve in all these cases to determine the kind or affection of the unknown parts.

In working by logarithms it must be observed, that when the resulting logarithm is the logarithm of a quotient, 10 must be added to the index; and when it is the logarithm of a product, 10 must be subtracted from the index.

II. Resolu-
II. Resolution of oblique-angled spherical Triangles.—This may be effected by means of four general cases, comprehending two or more problems.

Case 1. Given three of these four things, viz. two sides, b, c, and their opposite angles B and C, to find the fourth.

This case comprehends two problems, in one of which the unknown quantity is an angle, in the other a side; which are both resolved by means of equation No. (I.) from which we have

\[ \sin C = \frac{\sin b \sin B}{\sin b} \quad \text{and} \quad \sin C = \frac{\sin b \sin C}{\sin b} \]

Case 2. Of the four following things; viz. a, b, c, and an angle, any three being given, to find the fourth.

This case comprehends three problems.

1. When the three sides are given, to find an angle.

Here, from equation No. (II.) we have

\[ \cos A = \frac{\cos b \cos c}{\cos b} \quad \text{and} \quad \cos A = \frac{\cos a \cos b}{\cos a} \]

\[ \cos B = \frac{\cos b \cos c}{\cos b} \quad \text{and} \quad \cos B = \frac{\cos a \cos b}{\cos a} \]

\[ \cos C = \frac{\cos c \cos b}{\cos c} \quad \text{and} \quad \cos C = \frac{\cos a \cos b}{\cos a} \]

In this form, however, the equations are not adapted to logarithmic computation. We shall therefore refer to the form given under the article Sines, where we have

\[ 1 + \cos A = 2 \cos^2 \frac{A}{2} \quad \text{and} \quad 1 - \cos A = 2 \sin^2 \frac{A}{2} \]

Hence,

\[ 2 \cos^2 \frac{A}{2} = \frac{\sin b \sin c + \cos a - \cos b \cos c}{\sin b \sin c} = \frac{\cos a - \cos (b + c)}{\sin b \sin c} \]

Hence, also, 2 \sin^2 \frac{A}{2} = \frac{\cos (b - c) - \cos a}{\sin b \sin c} \]

The latter of these, divided by the former, gives

\[ \tan^2 \frac{A}{2} = \frac{\cos (b - c) - \cos a}{\cos a - \cos (b + c)} \]

which is equivalent to

\[ \tan^2 \frac{A}{2} = \frac{\sin \frac{1}{2} (a + b - c) \sin \frac{1}{2} (a + c - b)}{\sin \frac{1}{2} (a + b + c) \sin \frac{1}{2} (b + c - a)} \]

See Sines.

Hence we have, for the tangents of the half angles, these three symmetrical equations; viz.

\[ \tan \frac{1}{2} A = \sqrt{\frac{\sin \frac{1}{2} (a + b - c) \sin \frac{1}{2} (a + c - b)}{\sin b \sin c}} \]

\[ \tan \frac{1}{2} B = \sqrt{\frac{\sin \frac{1}{2} (a + b + c) \sin \frac{1}{2} (b + c - a)}{\sin b \sin c}} \]

\[ \tan \frac{1}{2} C = \sqrt{\frac{\sin \frac{1}{2} (a + b + c) \sin \frac{1}{2} (b + c - a)}{\sin b \sin c}} \]

The expressions for the sines of the half angles might be obtained with equal facility. As they are symmetrical, we shall put down but one; viz.

\[ \sin \frac{1}{2} A = \sqrt{\frac{\sin \frac{1}{2} (a + b - c) \sin \frac{1}{2} (a + c - b)}{\sin b \sin c}} \]

And expressions for the cofines and cotangents of the half angles may be readily found from the above by the forms \( \cos \frac{1}{2} A = \frac{1}{\tan \frac{1}{2} A} \), \( \cot \frac{1}{2} C = \frac{1}{\tan \frac{1}{2} C} \), \( \tan \frac{1}{2} A = \frac{\sin \frac{1}{2} A}{\cos \frac{1}{2} A} \), \( \tan \frac{1}{2} B = \frac{\sin \frac{1}{2} B}{\cos \frac{1}{2} B} \), \( \tan \frac{1}{2} C = \frac{\sin \frac{1}{2} C}{\cos \frac{1}{2} C} \).

When two sides, as b and c, become equal, the expression for \( \cos \frac{1}{2} A \), becomes \( \sin \frac{1}{2} A = \frac{\sin \frac{1}{2} a}{\cos \frac{1}{2} b} \).

If \( a = b = c = 90^\circ \), then \( \sin \frac{1}{2} A = \frac{1}{\sqrt{2}} = \frac{1}{2} \sqrt{2} \)

\( = \sin 45^\circ \); and \( A = B = C = 90^\circ \).

Leaving other corollaries to be deduced by the reader, let us proceed to the next problem in this case.

2. To find the sine opposite to the given angle C; that is, given two sides and the included angle, to find the third side.

Find from the data a dependent angle \( \phi \) such, that

\[ \tan \phi = \cos C \tan b \]

Substitute for \( \cos C \), in the third equation No. (II.) its value in this, and it will become

\[ \cos \phi = \cos \frac{a}{\cos \phi \cos b \sin \phi} \quad \cos \frac{a}{\cos \phi \sin \phi} \quad \cos \phi \sin \phi \]

\[ = \cos \frac{b}{\cos \phi \sin \phi} \]

\[ \cos \phi \sin \phi \]

\[ \cos \phi \sin \phi \]

Hence \( a \) is known by adding \( \phi \).

Case 3. Of the four following parts; viz. two sides, a and c, and two angles, B and C, one opposite, the other adjacent; three being given, to find a fourth.

This case presents four problems.

1. Given \( a, c, B \), to find \( C \).

Determine an arc \( \phi \) by this condition,

\[ \cot \phi = \cot \phi \quad \cot B, \quad \text{or} \quad \cot \phi = \cot \phi \]

Substitute
Substitute this value of cot. $c$ for it in Equation 3. 

$N^o$ (IV.) and it will become

$\sin a \cot \phi' \cot B = \cot a \cot \phi'$

Whence

$\cot \phi' = \frac{\cot a \sin \alpha - \cot \alpha}{\cot B}$

(XVI.)

It may be observed, that equation $N^o$ (V.) is analogous to $N^o$ (VIII.) ; which shews, that the operation here performed, is equivalent to letting fall a perpendicular arc from the angle $A$ to the base $a$; the subsidiary arc of $F^o$ being the segment adjacent to the given angle $B$.

2. Given $B$, $C$, $\phi$, to find $a$.

Here $\phi'$ must be found by $N^o$ (V.) and then from $N^o$ (VI.) we have

$\sin (a - \phi') = \frac{\cot C \sin \phi'}{\cot B}$.

(XVII.)

Whence $a$ becomes known.

3. Given $B$, $C$, $a$, to find $c$.

Find a dependent angle $\phi''$, by making

$\cot C = \cot C \tan \phi''$, or $\frac{\cot C}{\cot a} = \tan \phi''$.

(XVIII.)

The following are the expressions for the sines of the half angles; viz.

$\sin \frac{1}{2} a = \sqrt{\frac{\cot \frac{1}{2} (A + B - C) \cot \frac{1}{2} (A + B + C)}{\cot \frac{1}{2} (B + C + A) \cot \frac{1}{2} (B + C - A)}}$

$\sin \frac{1}{2} b = \sqrt{\frac{\cot \frac{1}{2} (B + C - A) \cot \frac{1}{2} (B + C + A)}{\cot \frac{1}{2} (B + C + A) \cot \frac{1}{2} (B + C - A)}}$

$\sin \frac{1}{2} c = \sqrt{\frac{\cot \frac{1}{2} (A + B - C) \cot \frac{1}{2} (A + B + C)}{\cot \frac{1}{2} (A + B + C) \cot \frac{1}{2} (A + B - C)}}$

(XIX.)

The prefent article we had occasion to mention the analogies of Napier, which it may not be amifs to illustrate before we proceed any farther in our investigations. These analogies are four simple and elegant formulas, which we owe to the celebrated inventor of logarithms, of which two ferve to determine any two angles of a spherical triangle by means of two oppofite fides and their included angle; while the other two ferve to fnd any two fides by means of their oppofite angle and the contained fide. They, therefore, together with equation $N^o$ (I.), will ferve for the folution of all the cofes of oblique-angled spherical triangles. The investigation of these analogies may be given as follow.

If from Equation I. $N^o$ (II.) $\cot C$ be exarninated, there will result, after a little reduction,

$\cot a \sin \phi = \cot a \sin \phi' - \cot \phi'$

and, by a simple permutation of letters,

$\cot b \sin \phi = \cot b \sin \phi' - \cot \phi'$

Adding these equations together, and reducing them, we have

$\sin \phi \sin \phi' = (1 + \cot C \sin \phi) \sin \phi'$

Now
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Now from No. (I.) we have

\[
\sin a \sin b \sin c.
\]

Clearing these equations of their denominators, and respectively adding and subtracting them, there results

\[
\sin (\sin A + \sin B) = \sin (\sin A - \sin B).
\]

Dividing each of these two equations by the preceding,

\[
\frac{\sin A + \sin B}{\cos A + \cos B} = \frac{\sin A - \sin B}{\cos A - \cos B}.
\]

Consequently, from the relation established under Arithmetic of Sines,

\[
\tan \frac{1}{2} (A + B) = \cot \frac{1}{2} (a - b).
\]

And these equations, expressed as analogies, are,

\begin{align*}
\text{cof.} \frac{1}{2} (a + b) : \text{cof.} \frac{1}{2} (a - b) & : : \text{tan.} \frac{1}{2} (A + B) : \text{tan.} \frac{1}{2} (A - B) \\
\text{fin.} \frac{1}{2} (a + b) : \text{fin.} \frac{1}{2} (a - b) & : : \text{fin.} \frac{1}{2} C : \text{tan.} \frac{1}{2} (A - B)
\end{align*}

These analogies being applied to the supplemental triangle, by putting \(180^\circ - A\), \(180^\circ - B\), \&c. for \(a\), \(b\), \&c. we have

\begin{align*}
\text{cof.} \frac{1}{2} (A + B) : \text{cof.} \frac{1}{2} (A - B) & : : \tan. \frac{1}{2} c : \text{tan.} \frac{1}{2} (a + b) \\
\text{cof.} \frac{1}{2} (A + B) : \text{cof.} \frac{1}{2} (A - B) & : : \tan. \frac{1}{2} c : \text{tan.} \frac{1}{2} (a - b)
\end{align*}

From a due consideration of these four analogies, it results,

1. That \(\frac{1}{2} (A - B) < 90^\circ\), or that the difference of two angles of a spherical triangle is less than \(180^\circ\).

2. That \(\frac{1}{2} (a + b)\) and \(\frac{1}{2} (A + B)\) are always of the same affection.

3. That the difference of two sides is always less than \(180^\circ\).

4. That \((a - b)\) and \((A - B)\) have always the same sign; whence it follows, that the greatest angle is opposite to the greatest side, and reciprocally.

To these it may be added,

5. That the least angle is opposite to the least side, and the mean angle to the mean side.

One or other of these observations will serve to remove the ambiguity in the doubtful cases where \(a\), \(b\), and \(B\), or \(A\), \(B\), and \(b\), are given.

We may now collect the most commodious of these theorems, and present in one place all that will be usually required in the solution of oblique-angled spherical triangles.

\begin{align*}
\tan \frac{1}{2} A = \sqrt{\left\{ \begin{align*}
\sin \frac{1}{2} (a + b - c) & \sin \frac{1}{2} (a + c - b) \\
\sin \frac{1}{2} (b + c - a) & \sin \frac{1}{2} (a + c + b)
\end{align*} \right.} \\
\tan \frac{1}{2} B = \sqrt{\left\{ \begin{align*}
\sin \frac{1}{2} (b + c - a) & \sin \frac{1}{2} (a + b - c) \\
\sin \frac{1}{2} (a + c - b) & \sin \frac{1}{2} (a + b + c)
\end{align*} \right.} \\
\tan \frac{1}{2} C = \sqrt{\left\{ \begin{align*}
\sin \frac{1}{2} (a + b - c) & \sin \frac{1}{2} (b + c - a) \\
\sin \frac{1}{2} (a + b + c) & \sin \frac{1}{2} (a + b - c)
\end{align*} \right.} \\
\tan \frac{1}{2} a = \sqrt{\left\{ \begin{align*}
- \cos \frac{1}{2} (B + C - A) & \cos \frac{1}{2} (A + B + C) \\
\cos \frac{1}{2} (A + B - C) & \cos \frac{1}{2} (A + C - B)
\end{align*} \right.} \\
\tan \frac{1}{2} b = \sqrt{\left\{ \begin{align*}
- \cos \frac{1}{2} (A + C - B) & \cos \frac{1}{2} (A + B + C) \\
\cos \frac{1}{2} (B + C - A) & \cos \frac{1}{2} (A + B - C)
\end{align*} \right.} \\
\tan \frac{1}{2} c = \sqrt{\left\{ \begin{align*}
- \cos \frac{1}{2} (A + B - C) & \cos \frac{1}{2} (A + B + C) \\
\cos \frac{1}{2} (A + C - B) & \cos \frac{1}{2} (B + C - A)
\end{align*} \right.}
\end{align*}

\begin{align*}
\tan \frac{b - a}{2} = \tan \frac{1}{2} c & \sin \frac{1}{2} (B - A) \\
\tan \frac{b + a}{2} = \tan \frac{1}{2} c & \cos \frac{1}{2} (B - A) \\
\tan \frac{c - b}{2} = \tan \frac{1}{2} a & \sin \frac{1}{2} (C - B) \\
\tan \frac{c + b}{2} = \tan \frac{1}{2} a & \cos \frac{1}{2} (C - B) \\
\tan \frac{a - c}{2} = \tan \frac{1}{2} b & \sin \frac{1}{2} (A - C) \\
\tan \frac{b - a}{2} = \tan \frac{1}{2} b & \cos \frac{1}{2} (A - C) \\
\tan \frac{B - A}{2} = \cot \frac{1}{2} C
\end{align*}
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15. \( \tan \frac{B + A}{2} = \cot \frac{1}{2} C \)
\( \cot \frac{1}{2} (b - a) \)
\( \tan \frac{1}{2} (b + a) \)

16. \( \tan \frac{C - B}{2} = \cot \frac{1}{2} A \)
\( \tan \frac{1}{2} (c - b) \)
\( \cot \frac{1}{2} (c + b) \)

17. \( \tan \frac{C + B}{2} = \cot \frac{1}{2} A \)
\( \tan \frac{1}{2} (c - b) \)
\( \cot \frac{1}{2} (c + b) \)

18. \( \tan \frac{A - C}{2} = \cot \frac{1}{2} B \)
\( \tan \frac{1}{2} (a - c) \)
\( \cot \frac{1}{2} (a + c) \)

19. \( \tan \frac{A + C}{2} = \cot \frac{1}{2} B \)
\( \tan \frac{1}{2} (a - c) \)
\( \cot \frac{1}{2} (a + c) \)

20. \( \tan \frac{1}{2} e = \tan \frac{1}{2} (b - a) \)
\( \tan \frac{1}{2} (b + a) \)

21. \( \tan \frac{1}{2} c = \tan \frac{1}{2} (b + a) \)
\( \tan \frac{1}{2} (b - a) \)

22. \( \tan \frac{1}{2} a = \tan \frac{1}{2} (c - b) \)
\( \tan \frac{1}{2} (c + b) \)

23. \( \tan \frac{1}{2} a = \tan \frac{1}{2} (c + b) \)
\( \tan \frac{1}{2} (c - b) \)

24. \( \tan \frac{1}{2} b = \tan \frac{1}{2} (a - e) \)
\( \tan \frac{1}{2} (a + e) \)

25. \( \tan \frac{1}{2} b = \tan \frac{1}{2} (a + e) \)
\( \tan \frac{1}{2} (a - e) \)

26. \( \cot \frac{1}{2} C = \tan \frac{1}{2} (B - A) \)
\( \tan \frac{1}{2} (A - C) \)
\( \cot \frac{1}{2} (B - A) \)
\( \cot \frac{1}{2} (A - C) \)

27. \( \cot \frac{1}{2} C = \tan \frac{1}{2} (B + A) \)
\( \tan \frac{1}{2} (A + C) \)
\( \cot \frac{1}{2} (B + A) \)
\( \cot \frac{1}{2} (A + C) \)

28. \( \cot \frac{1}{2} A = \tan \frac{1}{2} (C - B) \)
\( \tan \frac{1}{2} (B - A) \)
\( \cot \frac{1}{2} (C - B) \)
\( \cot \frac{1}{2} (B - A) \)

29. \( \cot \frac{1}{2} A = \tan \frac{1}{2} (C + B) \)
\( \tan \frac{1}{2} (A + C) \)
\( \cot \frac{1}{2} (C + B) \)
\( \cot \frac{1}{2} (A + C) \)

30. \( \cot \frac{1}{2} B = \tan \frac{1}{2} (A - C) \)
\( \tan \frac{1}{2} (A + C) \)
\( \cot \frac{1}{2} (A - C) \)
\( \cot \frac{1}{2} (A + C) \)

31. \( \cot \frac{1}{2} B = \tan \frac{1}{2} (A + C) \)
\( \tan \frac{1}{2} (A - C) \)
\( \cot \frac{1}{2} (A - C) \)
\( \cot \frac{1}{2} (A + C) \)

We are indebted for many of the above transformations to Gregory's *Trigonometry*; others have been derived from Bonnycastle's *treatise* on the same subject.

We shall now conclude this article, by illustrating the solution of spherical triangles by means of Napier's *five circular parts*. See *PART AND CIRCULAR PART*.

Solution of right-angled spherical Triangles, by Napier's *circilar Parts*—If either one or both the sides, including the right angle, come into the question, for it among the data, write its complement to a quadrant. Since then by the general rule delivered under the article *CIRCULAR PARTS*, and rendered logarithmic, the whole fine, with the fine complement of the middle part, must be equal to the fines of the disjunct parts, and the cotangents of the conjunct parts; from the sum of those data subtract the third datum; the remainder will be some fine or tangent, the side or angle corresponding to which, in the table of fines, &c. is the side or angle sought.

This universal rule being of great service in trigonometry, we shall apply it to the various cases thereof, and illustrate it with examples; which examples, in the case of disjunct or separate parts, will at the same time illustrate the common method; but in the case of contiguous parts they admit of other solutions.

1. Given the hypotenuse \( BC \), \( 60^\circ \), and the angle \( C, 23^\circ 30' \); to find the opposite leg \( AB \) (fig. 4.) Since \( AB \) is the middle part, \( C \) and \( BC \) are disjunct (see PART); the product of the whole fine, into the cofine of the comple ment \( A B \), i.e. the fine itself of \( A B \), is equal to the product of the fines of \( C \) and \( BC \).

Therefore from the fine of \( C \) 9.6006997
+ fine of \( BC \) 9.3757306

Subtract whole fine 10.0000000

Remains fine of \( A B \) 9.5382303

The nearest correponding number to which, in the tables, is \( 20^\circ 12' \).

2. Given the hypotenuse \( BC \), \( 60^\circ \), and the leg \( AB, 20^\circ 12' \); to find the opposite angle \( C \). It is evident from the preceding problem, that from the sum of the whole fine, and the fine of the leg \( AB \), the fine of the hypotenuse \( B C \) is to be subtracted, the remainder is the fine of the angle \( C \). The example therefore of the former case is easily converted into an example of this.

3. Given the leg \( AB, 20^\circ 12' \), and the opposite angle \( C, 23^\circ 30' \); to find the hypotenuse \( BC \). It is evident from the first case, that from the sum of the whole fine, and the fine of \( AB \), is to be subtracted the fine of the angle \( C \), and the remainder is the fine of the hypotenuse \( BC \).

4. Given the hypotenuse \( BC \), \( 60^\circ \), and one leg \( AB, 20^\circ 12' \); to find the other leg. Since \( BC \) is a mean part, and \( A \) and \( AB \) and \( AC \) are disjunct parts, the product of the whole fine, into the cofine of the hypotenuse \( BC \), is equal to the product of the fines of the complements, i.e. the cofines of the legs \( A B \) and \( AC \).

Therefore from the whole fine

\( \cot \) fine of \( BC \) 9.6989700

Subtract cofine of \( AB \) 9.9724310

Remains cofine of \( AC \) 9.7265390

The corresponding number to which, in the tables, is \( 32^\circ 11' \); therefore \( AC = 57^\circ 49' \).

5. Given the legs \( AC, 57^\circ 49' \), and \( AB, 20^\circ 12' \); to find the hypotenuse \( BC \). It is evident from the preceding case, that the whole fine is to be subtracted from the sum of the cofines of the legs \( AB \) and \( AC \); the remainder is the cofine of the hypotenuse \( BC \). The example, therefore, of the preceding case is easily applied to this.

6. Given the leg \( AC, 57^\circ 49' \), and the adjacent angle \( C, 23^\circ 30' \); to find the opposite angle \( B \). Since \( B \) is a middle part, and \( A \) and \( C \) are disjunct parts; the product of the whole fine, by the cofine of \( B \), is equal to the product of the fine of \( C \), and the fine of the complement, i.e. the cofine of \( A \).

Therefore from the fine of \( C \)

\( \cot \) cofine of \( AC \) 9.6006997

Subtract whole fine 10.0000000

Remains cofine of \( B \) 9.3272307

The nearest number corresponding to which, in the tables, is \( 12^\circ 15' \); therefore \( B = 77^\circ 45' \).

7. Given the leg \( AC, 57^\circ 49' \), and the opposite angle \( B, 77^\circ 45' \); to find the adjacent angle \( C \). It is evident from the preceding case, that the cofine of \( AC \) is to be subtracted...
TRIGONOMETRY.

16. Given the oblique angles B, 77° 44', and C, 23° 30'; to find the hypotenuse B C. From the sum of the cotangents of C and B, subtract the whole fine; the remainder is the cofine of B C.

Solution of oblique-angled spherical Triangles.—1. In an oblique-angled spherical triangle A B C, (fig. 5.) two sides, A B and B C, being given, together with an angle, A, opposite to one of them, to find the other, C; the rule is,

As the sine of the side B C is to the sine of the opposite angle A; so is the sine of the side A B to the sine of the opposite angle C.

Suppose, for example, B C, 39° 29'; A, 43° 20'; B A, 66° 45'; then will

Sine of B C 9.8033572
Sine of A 9.8364771
Sine of B A 9.9632168

Sine of C 9.799939 The nearest corresponding number to which, in the tables, is 82° 34'.

2. Given two angles C, 82° 34', and A, 43° 20', together with the side A B, 66° 45', opposite to one of them, C; to find the side B C opposite to the other of them, A; say, as the sine of the angle C is to the sine of the opposite side A B; so is the sine of the angle A to the sine of the opposite side B C. The former example may suffice for the present case.

3. Given two sides A B, 66° 45', and B C, 39° 29', together with an angle opposite to one of them A, 43° 20'; to find the angle included by them, B. Suppose the angle C to be acute, since the other, A, is also acute, the perpendicular B E falls within the triangle. In the right-angled triangle A B E, therefore, from the given angle A, and side A B, find the angle A B E. Since B E is assumed as a lateral part in the triangle A B E, the angle E B C is a middle part, and the side B C must be a conjoint part; the cofine of the angle E B C will be found by subtracting the cotangent of A B from the sum of the cofine of the angle A B E, and the cotangent of B C. If then the angles A B E and E B C be added together, or in case the perpendicular fall without the triangle, be subtracted from each other, you will have the angle required B.

E. gr. Whole fine 10.000000
Cofine of A B 9.5963154

Sum - 19.5963154

Cotangent of A - 10.0252805

Cotangent of A B E 9.5710349 The nearest number corresponding to which, in the tables, is 20° 26'.

A B E, therefore, is 69° 34'.

Cofine of A B E 9.5429713
Cotangent of B C 10.0841529

Sum - 19.6271242

Cotangent of A B - 9.6330985

Cofine of E B C 9.9940257 The nearest number corresponding to which, in the tables, is 92° 29'; therefore A B C = 79° 31'.

4. Given two angles A, 43° 20', and B, 79° 34', together with the adjacent side A B, 66° 45', to find the side B C opposite to one of them.

From one of the given angles B, let fall a perpendicular E B to the unknown side of A C; and in the right-angled triangle A B E, from the given angle A, and hypotenuse A B, find the angle A B E; which, subtracted from the angle...
angle A B C, leaves the angle E B C. But if the perpendicular shall fall without the triangle, the angle A B C should have been subtracted from A B E. Since as the perpendicular B E is taken for one of the lateral parts, the middle part in the triangle A B E is the angle B, and the

conjoint part A B; in the triangle E B C the middle part is the angle A, and the conjoint part B C; the cotangent of the side B C is found by subtracting the cofine of E B A from the sum of the cotangent of A B, and the cofine of E B C. The example of the preceding case is easily applied to this.

5. Given two sides A B, 66° 45', and B C, 39° 29', with the angle A opposite to one of them, 43° 20'; to find the third side A C.

Letting fall, as before, the perpendicular B E; in the right-angled triangle A B E, from the given angle and hypothenuse A B, find the side A E. Since affining B E for a lateral part in the triangle A E B, A B is the middle part, and A E is the separate part; and in the triangle B E C, B C is the mean part, and E C a conjoint part; the cofine of E C is found by subtracting the cofine of A B from the sum of the cofines of A E and C B. If then the segments A E and E C be added together, or in case the perpendicular fall without the triangle, be subtracted from each other, the side A C will be had.

6. Given two sides A C, 65° 31', and A B, 66° 45', together with the included angle A, 43° 20'; to find the third side B C opposite thereto.

Letting fall the perpendicular B E, find, in the right-angled triangle, the segment A E; which, subtracted from A C, leaves E C. If the perpendicular fall without the triangle, A C is to be subtracted from A E. Since by affining the perpendicular B E for a lateral part in the triangle A E B, A B becomes a middle part, and A E a separate part; in the triangle E B C, C B is the middle part, E C a conjoint part; the cofine of B C is found by subtracting the cofine of A E from the sum of the cofines of A B and E C.

7. Given two angles A, 43° 20', and B, 79° 3'; together with the side C B, 39° 29', opposite to one of them; to find the side A B adjacent to both.

Letting fall the perpendicular C D from the unknown angle C, to the opposite side A B; and that falling within the triangle; from the given A B, and the hypothenuse B C, seek in the right-angled triangle B C D for the segment B D. Since affining the perpendicular C D for a lateral part in the triangle C D B, D B is the mean part, and the angle B a conjoint part; and in the triangle C D A, A D is the middle part, and the angle A a conjoint part: the cofine of the segment A D is found by subtracting the cotangent of the angle of A B from the sum of the cofine of D B, and the cotangent of the angle A. If then the segments A D and D B be added, or in case the perpendicular fall without the triangle, be subtracted from each other, the result will be the side A B required.

8. Given two sides A B, 66° 45', and B C, 39° 29', with the included angle 79° 3'; to find the angle A opposite to one of them.

Letting fall the perpendicular C D, find the segment B D, as in the preceding problem. This, subtracted from A B, leaves A D. If the perpendicular fall without the triangle, A B is to be added to D B. And since by affining the perpendicular C D for a lateral part in the triangle C D B, B D is the middle part, and the angle B a conjoint part; and in the triangle C D A, A D is the middle part, and the angle A a conjoint part, the cotangent of the angle A is formed by subtracting the sine of D B from the sum of the cotangent of the angle B, and of the sine of A B.

9. Given two angles A, 43° 20', and B, 79° 3', together with the adjacent side A B, 66° 45'; to find the angle C opposite to the same.

From one of the given angles B, letting fall the perpendicular to the opposite side A C; in the right-angled triangle A B E, from the given angle A, and hypothenuse A B, we find the angle A B E; which, subtracted from A B C, leaves the angle E B C. In case the perpendicular fall without the triangle, A B C is to be subtracted from A B E. Since by affining B E for a lateral part in the triangle C E B, the angle C is a middle part, and the angle C B E a conjoint part; and in the triangle A B E, the angle A is the middle part, and the angle A B E the conjoint part: the cofine of the angle C is found by subtracting the sine of the angle A B E, from the sum of the cofines of the angle A, and the sine of E B C.

10. Given two angles A, 43° 20', and C, 82° 34', together with the side A B, 66° 45', opposite to one of them; to find the other angle.

From the angle B sought, let fall a perpendicular B E; and in the right-angled triangle A E B, from the given angle A, and hypothenuse B A, find the angle A B E. Since affining the perpendicular E B for a lateral part in the triangle E C B, the angle C is the middle part, and the angle C B E a conjoint part; and in the triangle A B E, the angle A is the middle part, and the angle A B E a conjoint part: the cofine of the angle E B C is found by subtracting the cofine of A from the sum of the cofine of C, and of the cofine of E B C. If then A B E and E B C be added, or in case the perpendicular fall without the triangle, be subtracted from each other, the result will be the angle required A B C.

11. Given the three sides, to find an angle opposite to one of them. 1. If one side A C (Plate II. fig. 8a) be a quadrant, and the leg A B be less than a quadrant, find the angle A. Continue A B to F, till A F become equal to a quadrant; and from the pole A draw the arc C F, to cut the arc B F at right angles in F. Since in the right-angled triangle C B F, we have given the hypothenuse B C, and the side F B, or its complement A B to a quadrant; we shall find the perpendicular C F, which being the measure of the angle C A B, that angle is found of course.

2. If one side A C be a quadrant, and the other A B greater than a quadrant, seek again the angle A: from A B subtract the quadrant A D, and from the pole A describe the arc C D, cutting the arc A B at right angles in D. Since in the right-angled triangle C D B, the hypothenuse C B, and side D B, or excess of the side A B beyond a quadrant, is given, the perpendicular C D will be found as before, which is the measure of the angle A required.

3. If the triangle be isosceles, and A C = C F; and the angle A C F be required; bisect A F in D, and through D and C draw the arc D C. Since D C is perpendicular to A F, the angles A and F, and A C D and D C F, are equal; from the hypothenuse A C, and leg A D, given in the right-angled triangle A C D, we find the angle A C D; the double of which is the angle required A C F; and from the same data may the angle A or F be found.

4. If the triangle be scalene, and the angle A (Plate III. fig. 5.) be required; from C let fall the perpendicular C D, and seek the half-difference of the segments A D and D B, by saying, as the tangent of half the base A B is to the tangent of half the sum of the legs A C and C B; so is the tangent of their half-difference to the tangent of the half-difference of the segments A D and D B: add then the half-difference of the segments to the half-base, to find the greater segment; and subtract the same from the side for the less.
Thus having in the right-angled triangle $C A D$, the hypothema $A C$, and the side $A D$, the angle $A$ is found thence. After the fame manner is $B$ found in the other $C D B$, from $C B$ and $D B$ given.

12. Given the three angles $A$, $B$, and $C$, to find any of the sides. Since in lieu of the given triangle, another may be assumed, whose sides are equal to the given angles, and the angles to the given sides: this problem is resolved after the fame manner as the preceding one.

**TRIGONUM**, or **Triangular Harp**, an ancient musical instrument. (See Plate of ancient Instruments.) One of this kind was taken from an ancient painting in the museum of the king of Naples, in which it is placed on the shouder of a little dancing Cupid, who supports the instrument with his left hand, and plays upon it with his right. The trigonum is mentioned by Athenæus, lib. iv. and by Julius Pollux, lib. iv. cap. 9. According to Athenæus, Sophocles calls it a Phrygian instrument; and one of his Deinopisophyta tells us, that a certain musician of the name of Alexander Alexandrinus was so admirable a performer upon it, and had given such proofs of his abilities at Rome, that he made the inhabitants μουσικώς, musically mad. It may not be unworthy of remark, that this little instrument resembles the Theban harp, in the circumstance of wanting one side to complete the triangle. The performer too, being a native of Alexandria, as his name implies, makes it probable it was an Egyptian instrument upon which he gained his reputation at Rome.

**TRIGUERA**, in Botany, was so called by the late abbé Cavanilles, in honour of his friend Don Candido Maria de Trigueros, who gathered this plant, then suppos'd entirely non defept, in Andalusia. Another genus was originally thus designated, now *Lugaeu lobata* of Willdenow, Sp. Pl. v. 3. 753. The present seems to be a good genus, though the plant on which it is founded proves to be the rare and little-known *Verbasum Ofbecii* of Linnaeus, as the writer of the present article first discovered.—Cavan. Diff. 2. after page 166. Schreb. Gen. 114. Willd. Sp. Pl. v. 1. 839. Mart. Mill. Dict. v. 4.—Clas and order, *Pentandria Monogyonia*. Nat. Ord. Libida. Linn. Salts. Juff.

Gen. Ch. Col. Perianth inferior, of one leaf, permanent, divided half way down, into five unequal acute segments. Core. of one petal, bell-shaped; tube very short; limb inflated, plaited, five-cleft, longer than the calyx; the two upper segments reflexed. Nectary a short, membranous, five-toothed cup, surrounding the germen. Stam. Filaments five, very short, inserted into the teeth of the nectary at the outside; anthers arrow-shaped, converging. Pith. Gemen superior, roundish, with two furrows; style thread-shaped, straight, rather longer than the flaments; stigma obtuse. Peric. Berry dry, nearly globular, of four cells. Seeds two in each cell, roundish, compressed, rough, one over the other.

Eff. Ch. Corolla bell-shaped, irregular. Nectary with five teeth, surrounding the germen, and bearing the flaments. Berry dry, of four cells, with two seeds in each.

Obf. Cavanilles observed one or two of the cells to be occasionally abortive.

1. *T. ambrofiaca*. Musky Triguera. Cavan. Diff. 2. t. A. Willd. n. 1. (Vertebacum Ofbecki; Linn. Sp. Pl. 255. Willd. Sp. Pl. v. 1. 1006; excluding, from both, the reference to Tournefort, and the last-named place of growth. Obf. It. 52.)—Leaves decurrent, obturate, serrated. Calyx villous.—Native of Spain, towards the coast, and of Saléè in Barbary, flowering in the spring. Root annual. Stems simple, erect or decumbent, angular, leafy, a span high. Leaves alternate, two inches long, somewhat hairy, coarsely serrated, tapering at the base, and somewhat decurrent; the upper ones smaller. Flower-flaks axillary, in pairs, single-flowered, drooping. Calyx covered with woolly hairs. Corolla deep violet, an inch wide; nearly black in the throat. Seeds blackish, hard. The whole plant, called in Spanish *Almizquena*, and *Mordilla*, has a pleasant musky scent. It is spoken of as possessing the emollient narcotic virtues of Deadly Nightshade, and Hemlock, being, like those plants, useful in cancers of the breast; so far at least as to allay the pain.

2. *T. inodora*. Scentless Triguera. Cavan. as above. Willd. n. 2.—Leaves sessile, ovato-lanceolate, entire. Calyx smooth.—Found in Andalusia with the foregoing, and vulgarly named *Mordilla blandaqueina*. Differs from the first in the smoothness of every part. The flowers are handsome, drooping. Throat very pale violet, or yellowish-white, with five aries; limb pale violet, or purple, with entire pointles lobes.

**TRIGUEROS**, in Geography, a town of Spain, in the province of Seville; 8 miles N.N.E. of Moguer.

**TRIGYNIA**, in Botany, from *trigyna*, three, and *gynia*, a female, the name of an order in many classes of the Linnæean artificial system, distinguished by the flowers having three types, pistils, or female figmas. Of the latter, *Viburnum* and *Sambucus*, in the fifth class, are instances. The order in question occurs in the 18, 2d, 3d, 5th, 6th, 8th, 9th, 10th, 11th, 12th, and 15th classes; in the 4th and 7th it is wanting. Indeed in the 15th class, this order is but uncertain, *Delphinium* and *Aconitum*, on which Linnaeus founded it, being variable in the number of pistils. In the 12th class, *Icognaria*, it forms such unnatural and troublesome distinctions, as to be much better abolished. See *Pentagynia*.

**TRIHALAT.E**, so denominated from *tres*, three, and *bisum*, the fear of a feed, because some of the principal genera are remarkable for the broad scars of their three feeds; the 2d natural order among the *fragments* of Linneus, banding between his *Caryophyllae* and *Corydalis*, to the latter of which only it has any, even the slightest, affinity.

This is in itself but a heterogeneous assemblage, embracing several of Jullien's orders, particularly the *Sapindo*, *Aceret* and *Malpighhia*, as also his *Melia*. It consists of three fections. In the first are *Melia*, *Trichilia*, *Guarea* and *Turraez*; to which Linneus was afterwards inclined to add *Cedrela* and *Siiutenia*. The second fection consists of *Malpighia*, *Bannisteria*, *Hira*, *Tripoteris*, *Acer* and *Alcubius*; and the third, of *Staphylea*, *Spindus*, *Paulonia*, *Cardioporum* and *Tropolum*, to which Linneus afterwards added *Hippocratea*, more certainly belonging to the second fection.

Cavanilles, in his *Dyferations on Monadphous Plants*, has added many new genera to the *Trihala*; but he is ex-tolled beyond measure by Giseke in his edition of the *Praelectiones* of Linneus; where an account is given, not only of these genera, but of various others, considered by Cavanilles as monadphous, though contrary to the general opinion. See *Monadelphia*.

**TRIHING, TRIHING, or TRIHING**, from the Saxon *drihting*, an extent containing three or four hundreds, or the third part of a thire, or province. See *Tithing*.

Mr. Thoreby thinks the word ought to be written *thringing*. See Thoreby. Ducatus Leodens. p. 85.

These *trithings* still fulfil the part of a county, where by an easy corruption they are denominated *ridings*.

The word is also used for a court held within that circuit, which was the same with what we now call a *court-leet*, which is above a court-beron, and inferior to the county-court.

**TRIKALA**,
TRIALA, in Mythology, is a name of the Hindoo deity Siva. One of his names is Kala, Time, and the epithet Tri prefixed denotes his omniscience and omnipresence as to all times, past, present, and to come; a mythical triad or union of time. The honourable designation of Trikala is sometimes given to, or assumed by, individuals of supposed profundity of knowledge, especially if of an inspired or prophetic description. The confection of Siva in this form or character is Trikali, or Trikala-devi-kumari, meaning the divine triple maid, or triform divine maiden Kali. See Trisakti.

TRIALA-DEVI. See the preceding article.

TRILATERAL, a term applied to all three-sided figures. See Triangle.

TRILEUCUM PROMONTORIUM, or Lapacia Cory, in Ancient Geography, a promontory on the northern coast of Spain, N. of the country of the Callaei. According to Ptolemy, it lay between Flavium Brigantium and the mouth of the river Meturus or Meurus.

TRILL, in Botany, a Latin word, used for a tussle of three threads, woven or twinned together; but how it applies to this plant, we are not informed. Mutis, its discoverer, called the genus Jacquinia. De Theis understands the above name as merely equivalent to triple, and alluding to the three calyx-leaves, and three petals, which perhaps is right.—Linn. Mant. 153. Schreb. 347. Willd. Sp. Pl. v. 2. 1129. Mart. Mill. Dict. v. 4. Juss. 435.—Clas and order, Polyandra Monegyna. Nat. Ord. uncertain.

Gen. Ch. Cal. Perianth inferior, of three ovate, acute, spreading, flat, permanent leaves. Cor. Petals three, lanceolate, acute, smaller than the calyx. Stam. Filaments numerous, capillary, the length of the corolla; anthers roundish, minute, two-lobed. Pist. Germin superior, five-angled; style cylindrical; stigma simple. Peric. Berry oblong, feveral five-angled, of five cells, covered by the calyx. Seeds numerous, roundish, minute.

Eff. Ch. Petals three. Calyx of three leaves. Berry of five cells, with many seeds.

1. T. lutea. Linn. Mant. 247. Willd. n. 1.—Gathered at Carthagena, in South America, by Mutis, from whose description alone, contrary to his usual practice, Linnaeus adopted this genus into his System. This, the only species, is a shrub two fathoms in height, with very numerous, round, roughish branches. Leaves alternate, flaked, somewhat peltate, ovate, rather heart-shaped, pointed, serrated, veiny, downy. Footstalks round, smooth. Flowers; yellow, not from the corolla, but the anthers, generally terminal, racemose, their partial flaks simple, round, downy.

TRILL, in Mythic, a plain shake upon a single note, formed by a beating in the throat on the vowel o, or by the shaking of the palate on the throat in one found upon a note: this grace is usually made in clohes or cadences, and when on a long note exclamation or passion is expressed, the trill is made in the latter part of such note: but most commonly on binding notes and such as precede the closing note. See Trillo.

TRILL-Hookts, those used to hold the sides of a cart up to the horse.

TRILLETTO, in the Italian Mythic, a little short shake or quaver; it differs from trillo only in point of continuance, being its diminutive.

TRILLION, in Arithmetic, the number of a billion of billions.

After billions, we reckon by trillions, which makes a class of numeration, and is divided, like the other classes, into three places: thus we say, trillions, tens of trillions, hundreds of trillions, &c.


This genus is entirely confined, as far as botanists have hitherto observed, to North America. Linnaeus has described three species, nor has Willdenow any more, in his Sp. Pl. Pursh has given by far the best account of the genus, greatly increasing the number of species. We shall therefore follow him in the greater part of their arrangement. All are perennial, herbaceous, smooth, with a simple, erect, round, bit. n., bearing three simple entire leaves at the top, and a solitary flower, sessile or flaked, in the centre between them. Five of these plants are mentioned by Mr. Aiton, as cultivated in England, all hardy, flowering in April or May, in natural affinity, Trillium comes very near to Paris. See that article.


2. T. petiolatum. Plantain-leaved Trillium. Pursh n. 2. —Flower sessile, erect. Petals linear-lanceolate, upright, rather longer than the calyx. Leaves elliptic-lanceolate, acute, on very long footstalks. —About the waters of the Kookroofy. Goo. Lesis. Flowering in June. This singular species, whose flowers resemble those of the foregoing, has leaves very much like Plantago major. Pursh.

TRILLIUM.

flattened."—In sphagnum bogs, on the high mountains of Pennsylvania, Carolina, and Canada, flowering in May and June. Flowers white, with purple veins at the bottom. Berry scarlet. Pursh. We received from the late Rev. Dr. Muhlenberg, in 1799, a specimen answering precisely to this description, but not at all to Willdenow's name of undulatum. The leaves are an inch and half long, taper-pointed, on short stalks. Flower-stalk half that length. Petals an inch long, white, with slender parallel veins, which are of a fine purple at the base, even in the dried specimen. Anthers purple. Germs and style yellowish-white.


Pursh.

5. T. pumilum. Blunt-leaved Trillium. Pursh n. 5. (T. pumilum; Michaux Boreal.-Amer. v. 1. 215.)—Flower-stalk erect. Petals scarcely longer than the calyx. Leaves oval-oblong, obtuse, feltile. Native of the pine-woods of Lower Carolina, flowering in May. Petals pale flesh-coloured. Michaux. Specimens in the Linnaean herbarium, which answer well to this description, were most unaccountably confounded by Linnaeus with his "flabellum." They are inscribed "Trillium, Nova Tradevfallsia affinis, flore odora, unius trilpetato, radice tuberiflata."—Clayton. The stem is slender, five or six inches high. Leaves an inch and a quarter, or an inch and a half, broad, of a rather narrow elliptical shape. Flower on a very short stalk; in one specimen nearly feltile. Calyx-leaves exactly like the foliage, but only a quarter the size. Petals with fine, copious, interbranching veins, becoming purplish as they advance in age.

6. T. cernuum. Drooping Trillium. Linn. Sp. Pl. 484. Wild. n. 1. Ait. n. 1. Pursh n. 6. Sm. Spicil. 3. t. 4. Curt. Mag. t. 954. (Solanum trillimum, flore hexapetalaceo; Carex Carol. v. 1. 45. t. 45.)—On the authority of the author's herbarium, though his figure gives no idea of the plant. —Flower-stalk recurved. Petals lanceolate, the size and shape of the calyx-leaves, reflexed. Leaves rhomboid, abruptly pointed, on very short stalks.—In shady rocky situations, from Pennsylvania to Carolina, particularly on the banks of Schuylkill, near Philadelphia, flowering in May. Petals white. Barries purple. This may be called the largest of the genus, as I have often seen it near two feet high, with leaves measuring nine inches in diameter. Pursh. Our garden specimens are but one-third as large. The flower is perfectly reflexed. Petals white, with green ribs. Anthers and styles purple. Germs pale yellow, ovate, with six wings.

7. T. erectum. Upright-flaked Trillium. Linn. Sp. Pl. 484. Wild. n. 2. Ait. n. 2. Pursh n. 7. Curt. Mag. t. 470. (T. rhomboidum; Michaux Boreal.-Amer. v. 1. 215. Redout. Liliac. t. 134. Solanum trilphillum canadense; Carol. Canad. t. 166. t. 167.)—Flower-stalk erect. Flower inclining. Petals elliptical, pointed, spreading, the length of the calyx. Leaves rhomboid, pointed, feltile. —On the mountains, in boggy soil, from Pennsylvania to Carolina, flowering in May. Pursh. The leaves are three or four inches long, and three broad at the obtuse lateral angles. Flower-stalk nearly three inches long, erect, except a little curve at the top, from the drooping of the flower, which is fetid, and larger than any of the foregoing species. Calyx-leaves an inch and quarter long, ovate, pointed, spreading, green. Petals the same length, but broader and more elliptical, dark purplish-brown. Germs and filaments purple. Berry, according to Pursh, almost black. This is certainly T. erectum Linnaeus, though the specimen in his herbarium has no resemblance to it, having half a dozen flower-stalks, and not being an original specimen, nor of any authority. The specific name is not one of the best, there being several species equally erect, but rhomboidum is liable to the same objection. Had we found a better in any work of character, we might have been induced to swerve from our general rule of not changing eставлен names. We do not profess to be bound to keep any others, unless they are good.

8. T. pendulum. White Small-flowered Trillium.—"Wild. Hort. Berolin. t. 35." Ait. n. 3. Pursh n. 9. (T. erectum B; Curt. Mag. t. 1227. Pursh n. 7.)—Flower-stalk erect. Flower inclining. Petals ovate, pointed, spreading, longer than the calyx. Leaves rhomboid, pointed, feltile. —Native of the mountains of Pennsylvania and Carolina. We received a specimen from Dr. Muhlenberg in 1805, the same year in which Mr. Maffon sent plants to Kew. If flowers in April and May, and though nearly allied to the last, must surely be a distinct species. Every part is much smaller; the leaves more rhomboid; flower less strongly feticid than the erectum, with white petals, a reddish green, and yellow anthers and styles. Mr. Pursh seems to have infected this species twice; see his n. 7. and 9. We have not had an opportunity of consulting the Hortus Berolensis, but we rely on Mr. Dryander in Hort. Kew.

9. T. grandiflorum. Large-flowered Trillium. Salis. Parad. t. 1. Pursh n. 10. Ait. n. 4. (T. erythrocarpum; Curt. Mag. t. 855, excluding Michaux's synonym. T. rhomboideum; Michaux Boreal.-Amer. v. 1. 216.)—Flower and its stalk drooping. Petals ovate, their claws convoluting into a tube; limb spreading thrice as broad as the calyx, and much longer. Leaves ovate, somewhat rhomboid, pointed. —On the mountains and rocky banks of rivers, in Virginia and Carolina, flowering in May. We received a specimen in 1797 from the honourable Mrs. Barrington's garden at Mongewell, the root having been sent perhaps a year or two before from North America. Mr. Maffon is said to have sent the same to Kew in 1799. This is a large and handsome species. The petals are snow-white, veiny, two inches long; their bases convoluting into a sort of tube. Anthers yellow. Calyx-leaves ovate-lanceolate, an inch and half long, green.

10. T. obvatum. Ovate Trillium. Pursh n. 8.—"Flower-stalk erect. Petals obovate, bluntish, flat, spreading, scarcely longer or broader than the calyx. Leaves ovate, rhomboid, pointed, perfectly feltile."—Found in Canada, near Montreal. Flowers dark rose-coloured, probably white when first opening. Pursh. This author mentions some specimens in the herbarium of A. B. Lambert, Esq. agreeing in every respect herewith, which are the T. camacharum of Pallas. This perhaps is what Dr. Sims speaks of, under a similar name, in Curt. Mag. t. 855. We have not examined either.

TRILLIUM, in Gardening, furnishes plants of the low, tuberous-rooted, flowered, perennial kind, among which the species mostly cultivated are, the drooping trillium (T. cernuum); the upright trillium (T. erectum); and the feathery-flowered trillium (T. feifstream). Method of Culture.—These plants may be increased by seeds, which should be sown on a shady border as soon as they become ripe in the autumn; when they appear in the spring, the plants should be kept clean from weeds, and in the
the autumn following be planted out where they are to remain and flower. They succeed best in light soils, where the situation is rather shaded.

They all afford variety in such places.

TRILLO, in Geography, a village of Spain, situated on a small river near its union with the Tagus, and once famous for its curious water-mills, for sawing of timber brought down by the stream, but no longer existing. It is now celebrated for its medicinal waters, efficacious in cutaneous complaints, both externally and internally applied. The baths are up the river, on the opposite side of the Tagus, about the distance of a mile. They are divided into “Los cuatro Banos,” called the king’s bath, divided into four separate baths, all equally commodious and handsonal, with their proper appurtenances. The countef’s bath, so named after the lady of the count de Cifuentes, who is lord of the place, is close to the river, but judiciously built and remarkably solid, to resist every impulse of the stream. According to the analysis of Dr. Ortega, these waters participate of five substances, two volatile, and three fixed: viz. a phlogistic vapour, extremely anodyne, penetrating, and friendly to the nervous system; of a moderate quantity of gas, calcareous earth, common salt, felenitic salt; and that to sixteen ounces of water, one may calculate twenty-five grains and a half of fixed principle. Dr. Ortega observes, that the lightness of this water may enter into competition with that of distilled water, the purest we know of: therefore its effects may be more easily accounted for: that the heat of the water does not equal that of the blood, in a person in good health, and comes near to that tepid degree prescribed by the physicians in artificial baths.

TRILLO, Ital. a shake, in Music. Tofi has devoted his third chapter (in Galliard’s Translation, p. 41.) to the importance, use, and acquisition of a shake. He advises the vocal student, with the assistance of the master, to strive at attaining one that is “equal, distinctly marked, easy, and moderately quick, which are most beautiful qualifications.” The student will find the shake on the femitone or half-note much easier to acquire than that on the whole tone; which it will be necessary to practice first, and most frequently, as it includes the other. Tofi describes seven different kinds of shake, but none are worth the study but those on the tone and half-tone, which must at first be practiced slow, and its rapidity increased by minute degrees. The beat, or trillo mordente, differs little from the shake; in fact it is the shake reversed, ending upon the upper of two notes, instead of the lower. This grace was much used by singers in the former part of the last century, particularly in recitatives, and after the appoggiation from the note below. Mingotti was the last great singer whom we remember to have frequently used the trillo mordente, or beat. Mancini, however, gave a chapter to it in 1774. But he was of the Bernacchi school, which would now be called anticca.

TRILOBOUS LEAF, among Botanists. See Leaf.

TRILOCULAR CAPSULE. See Capsule.

TRILOKAN, in Mythology, a name of the Hindoo deity Siva. The name means with three eyes, that god being in some of his forms, and often in pictures and statues, so represented. Siva corresponds in many points with the many-named and multifortem Jupiter of the Greeks. We are informed by Pausianias, that Triophthalmus was an epithet of Zeus, and that a statue of him with three eyes was found so early as the Trojan war. From these circumstances, combined with many others, sir W. Jones was led to conclude that the identity of Jove and Siva, falls little short of being demonstrated. See Siva.

TRILOPUS, in Botany, a name given by Mitchell to the Linnaean genus Hamamelis. See that article.

TRIM, in Carpentry, is to fit one piece into another.

TRIM, in Geography, the thire-town of the county of Meath, Ireland, situated on the river Bayne. Though the affize-town, it is a place of no importance, but it was formerly walled and defended by a strong castle, and it has some ruins of religious foundations. Before the Union, it was re-presented in parliament. It is 225 miles N.W. by W. from Dublin.

TRIMACRUS, or Trimacer, in the Ancient Proseody, a foot in verse, consisting of three long syllables.

TRIMALORE, in Geography, a town of Hindooftan, in the Carnatic; 15 miles N. of Tanjore.

TRIMANETORE, a town of Hindooftan, in the Carnatic; 15 miles E. of Warriore.

TRIMAPORE, a town of Hindooftan, in Marawar; 9 miles N. of Trimian.

TRIMARKISIA, in the Mange and War, a body of horse among the ancient Gauls, so called because each soldier had three horses attending him, so that when one was either killed in battle, or overcome by fatigue, he might immediately mount another. The Tartars of the Krim retain the practice; for they never undertake an excursion, without allowing three horses to one rider; and many ancient nations, beside the Gauls, observed the same method.

TRIMBERG, or Trimperg, in Geography, a town of the duchy of Wurzburg; 20 miles E. of Schweinfurt.

TRIMBUCK, a town of Hindooftan, in Bagala; 18 miles W.N.W. of Nafluck.

TRIMELES, in the Ancient Greek Music, a name or air for flutes.

TRIMELWADY, in Geography, a town of Hindooftan, in the Carnatic; 15 miles N.N.W. of Tanjore.

TRIMERES, in the Ancient Greek Music, a name which was executed in three different modes successively: the Phrygian, the Dorian, and the Lydian. Some ascribe the invention of this compound name to Saccadas the Argian, and others to Clonas of Thegra.

TRIMILCHI, a name by which the English Saxons called the month of May; because they always milked their cattle three times a day in that month.
TRIMITHUS, in Ancient Geography, a town in the eastern part of Cyprus, at some distance from the coasts, N. of Encolla, and E. of the promontory Pedalium.

TRIMMANIUM, or Trimamion, a town of Lower Media, on the Danube; marked in Anton. Itin. on the route from Vinimacium to Nicomedia, between Scaldania and Antaparthis.

TRIMMERS, in Architecture, pieces of timber framed at right angles to the joints, against the ways for chimneys, and well-holes for flars.

TRIMODIA, among the Romans, a bag like an inverted cone, in which fowls carried their feed. It was suspended from their neck, and was so called from its containing three buhels.

TRIMONEER, a corruption of timoner.

TRIMONTIUM, or Tramontium, in Ancient Geography, a town of Albion, belonging to the Selgovae, according to Ptolemy; probably situated where Annan now stands.—Also, one of the names of Philippopolis in Thrace. Ptol.

TRIMPEND, in Geography, a town of Prussia, in Bartenland; 12 miles S. of Inflenburg.

TRIMURTI, in the theological disquisitions of the Hindus, is a word of mythical and varied import. Its most obvious meaning in the Sanscrit tongue is three forms; but as some facts of Eastern theologians prefers to recognize the unity of the deity, the term is used singularly, and is equivalent to triform. In the Trimurti, the Hindus fancy a union or reunion of the three great powers or attributes of the godhead, personified in Brahma, Vishnu, and Siva; or creation, preservation, and destruction. Many other triune conjuctions are found typified by this mysterious affemblage, of which some notice is taken under our articles Om, Siva, and Trisula.

The Trimurti, or divine triad, is represented to the sense under the form of three heads joined. The well-known monstros sculpture in the Elephanta cavern temple is of this subject. Of this triune bust, Niebuhr, Maurice, and others have given representations. (See Elephanta and Mahakala.) One very like it was dug out of the ruins of an ancient temple on the island of Bombay, by the author of the Hindoo Pautheon, and an engraving is given of it in plate 81. of that work. A second Trimurti was found at the same time, but instead of being merely three heads, they are furnished with a body. This unusual form is also engraved for the work just mentioned; and the granite originals of both plates are deposited by the author in the museum at the East India House. The miniature bust of the gigantic sculpture in the Elephant cave is so large as to weigh several tons. The Hindoos have other modes of representing the Trimurti; three heads and bodies on one leg, and other similar whimiscalities, not unlike the crude delineations of the early Trinitarians of the West.

The Hindoos are very prone to combinations of three in one, and fancy they see something very myblendous in such typifications. As well as that just noticed of the powers or attributes of the deity, they combine three letters in a monogram, and have such a reverence for it, that the found which its articulation would convey is never uttered, or uttered most reverentially. These characters are equivalent to our A, U, M, and the found would be like Om.

The sun is a Trimurti, his properties of creative heat, preserving light, and destructive energy in an igneous form, comprehending the grand attributes of the deity, personified in Brahma, Vishnu, and Siva.

The Hindoos have a female Trimurti, composed of courge of the comforts or Sakti, or energies of the great powers. Thee are Sarasvuti, Lashmi, and Parvati; which fee.

Comparing the Hindoos with three of the gods of Greece, Cronus, Jupiter, and Mars, they are those nearest in character and attributes to the Eastern polytheistic trinity. But the Greeks, largely as they seem to have borrowed from the mythology of the Hindoos, do not appear to have popularly adopted their male Trimurti. The female triad may be recognizable in the Parac of the Weft, as noticed under Sakti. The three goddesses give each a name to a sacred river, and a supposed junction of these waters is a fruitful subject to the Hindoos enthusiast or poet. See Trivint and Saraswati.

Several other articles beginning with the Sanscrit word tri, contain something illustrative of the propencty of the Hindoos to triune combinations.

TRINACIA, or Trinacia, in Ancient Geography, a rich and powerful town of Sicily, and considered as the chief town of the island. Some writers have called it Tiraccia.

TRINCA, in Geography, a town of South America, in the province of Tucuman; 66 miles N. of St. Miguel de Tucman.

TRINCATITY, one of the Nicobar islands. N. lat. 8° 6'. E. long. 94° 5'.

TRINCAVELLI, Vettor, in Biography, an eminent physician, was born at Venice about 1491. He studied at Bologna and Padua; and having graduated at the latter university, he settled at Venice, where he became professor of philosophy, and acquired distinction in the practice of medicine. In 1551 he was promoted to the chair of medical professor at Padua, with a very considerable stipend. He died at Venice in 1563, and was honoured with a public funeral. He was a good Greek scholar, and was the first professor at Padua who commented on the works of Hippocrates in the originals. He also translated many of Galen's treatises; and edited in the original Greek the works of Themistius, of Johannes Grammaticus, the Manual of Epictetus with Arrian's Commentary, Arrian's Alexander's Expedition, Stobius, Hefiod, and other Greek writers. A collection of his works has been printed in 2 vols. fol. Haller. Gen. Biog.


TRINCOLI, in Geography, a town of the island of Ceylon, near the E. coast; 84 miles E.S.E. of Candy. N. lat. 7° 10'. E. long. 82° 6'.

TRINCOMALEE, or Trincomale, a town and harbour of Ceylon, lying in N. lat. 8° 30'. E. long. 81° 24'. The town runs in a N.E. direction along one branch of the bay. The country around it is mountainous and woody; the soil uncultivated and barren; and the whole appearance wild. The woods, which are very thick, contain abundance of wild beasts of various decriptions; particularly wild hogs, buffaloes, and elephants. The latter often come down to the lakes in the neighbourhood of the fort to drink and bathe; and have been frequently shot within a mile of the town. Trincomale, from its situation and constriction, is naturally strong. It occupies more ground than Columbo, but contains a much smaller number of houses, and those inferior in size and appearance to any that are met with in several towns on the S.W. coast. The circumference of Trincomalee, within the walls, is about three miles; within this space is also included a hill, or rising point, immediately over the sea, and covered with a great quantity of thick jungle, in which wild deer and other game find shelter. This rising ground is very little inhabited, N

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most of the houses being close to the landing place, which lies in the lowest part. Even the lower parts of the fort were much incumbered with wood till within these few years. The fort is strong, and commands the principal bays, and particularly the entrance into the grand harbour, or inner bay, which affords in all seasons and in every variety of weather a secure shelter to ships of all descriptions, being land-locked on all sides, and sufficiently deep and capacious to receive the largest vessel, or any number of vessels. The whole navy of England might find accommodation in this harbour. Its situation is such, that in either monsoon, ships can arrive at or depart from it, and make their passage good from or to any part of the eastern world, and whole fleets may remain within it, at every season of the year, in perfect security. This harbour is overlooked by fort Ostenburg, a strong fort standing on a cliff, which projects into the sea; it was originally built by the Portuguese out of the ruins of some celebrated pagodas which once stood here. This fort cannot be attacked by sea, unless the fort of Trincomalee be first taken, and the entrance of the harbour forced. In the bay the shores are so bold, and the water so deep close up to them, that it is almost possible to leap from the rocks into the vessels that moor alongside of them. At the extremity of the rock, on which the fort stands, a strong battery is erected, where the flag-staff of the fort is placed.

This harbour, from its nature and situation, is that which flanks Ceylon one of our most valuable acquisitions in the East Indies. As soon as the violent monsoons commence, every vessel which is caught by them in any other part of the bay of Bengal is obliged immediately to put to sea, to prevent inevitable destruction. At these seasons Trincomalee and Bombay alone, of all the ports on the different coasts of the peninsula of India, are capable of affording a safe retreat. The inextricable advantages to be derived from such a harbour are increased by its proximity and easy access to our settlements in the bay of Bengal. A vessel from Madras may arrive here in two days, and can at any time enter the harbour. These circumstances point out Trincomalee as an object of particular attention to our government, and of far more consequence to retain than the whole of the rest of the island. It will, however, require great encouragement and many improvements to render the town populous or anywise equal to Colombo. For the country around is not by any means so fertile as to tempt settlers to reside there; nor are the natural productions calculated to attract commerce. The climate has also been looked upon as the hottest and most unhealthy of the whole island. But the woods and marshes which rendered the climate infalubrious have been already in great measure cleared and drained, and the beneficial effects of these improvements were soon experienced. It is to be hoped that remedies may in the same manner be applied to the other defects under which Trincomalee at present labours: its trade is nothing, as there are no valuable natural productions to nourish it; but, from its situation, it is capable of becoming the richest emporium of the East. The want of commerce, and the uncultivated state of the surrounding country, are defects which flow mutually from each other; and the removal of one would soon, in a great measure, do away the other.

The Malavagons (which fee) falls into the magnificent bay of Trincomalee. (Percival's Ceylon.) This harbour, says Barrow (Travels in Southern Africa, vol. ii.), is to a maritime province a jewel of inestimable value; it holds the bay of Bengal at its mercy, and affords every facility of overawing and controlling the navigation of the straits of Sunda and Malacca. Our Asiatic poiffessions, commerce and marine, would consequently lie open to the depredations of the masters of Ceylon. Trincomalee was taken by the British troops in 1795; 70 miles N.E. of Candy.

TRINDELEN, a rock in the Scagglarac, at about equal distances between the coast of North Jutland and the coast of Norway; 7 miles N.N.E. from the island of Lesoe. N. lat. 67° 27'. E. long. 11° 1'.

TRINE, Dimension, or threefold dimension, includes length, breadth, and thickness.

The trine dimension is peculiar to bodies or solids.

TRINE, in Astrology, is the aspect or situation of one star with regard to another, when they are distant 120 degrees.

It is also called trigon, and is usually signified by the character Δ.

TRINE, in Rural Economy, a term applied to the quantities of same forts of articles, as the bullies and spokes of wheels, which of the former is thirteen, and of the latter twenty-five.

TRINETRA, in Mythology, a name of the Hindoo god Siva. It means with three eyes, similar to Trishala; which fee.

TRING, in Geography, a small market-town in the hundred of Dacorum, and county of Hertford, England; is situated within a short distance of the Icknield way, 30 miles W. by N. from the county-town, and 31 N.W. by W. from London. The manor was granted by William the Conqueror to Robert, earl of Ewe, but it soon afterwards reverted to the crown; and in the year 1148 was given by king Stephen, with all its appurtenances, to the abbey of Feverham, which he had then founded. His grant was confirmed to the monks by succeeding sovereigns; and Edward II. gave them a charter for a weekly market, and two annual fairs to be held at Tring. After the dissolution, Henry VIII. granted the manor to the archbishop of Canterbury; it is now the property of Sir Drummond Smith, bart. The parish church of Tring is a spacious, well-proportioned edifice, and consists of a nave, side aisles, and chancel, with a massive tower at the west end: the walls are supported by strong buttresses, and the whole is embattled. The nave is separated from the aisles by fix pointed arches, raking from high clustered columns. The roof is of timber frame-work, with strong beams going across: the supports on each side are terminated by carved figures. Most of the windows have obtuse pointed arches, and are divided into three compartments by mullions. In the interior are various monuments. Tring contains four meeting-houses for Dissenters of different denominations. A Sunday school for about eighty boys and girls has been established by subscription. The market-house is a mean edifice on wooden pillars, having a pillory and a cage beneath. The market is held on Fridays; principally for the sale of corn, meat, and straw-plait; the manufacture of the latter constitutes the employment of most of the females in this part of the country. Five fairs are now held annually. The population of Tring, as ascertained under the act of the year 1811, was 1847, occupying 352 houses.

Tring park, the seat of Sir Drummond Smith, bart. consists of between three and four hundred acres, ranging on the S.E. side of the town. The mansion is large and convenient, and the principal apartments are spacious and neatly fitted up. The hall is ornamented with Corinthian pillars. On the floor above the hall, and running across the house, is a gallery or ball-room, with a circular dome in the centre. This house was erected about the time of Charles II. by Henry Guy, efg.

At a short distance N.E. from Tring, is Tring Grove, the

TRINGA, Sand-piper, in Ornithology, the name of a distinct genus of birds, of the order of the Grallae; the distinguishing characters of which are, that the beak is roundish, and of the length of the head; the nostrils linear; and that the feet have each four toes, the outermost being generally connected at bottom by a small membrane. The species are numerous, and as follow.

Pugnax. With red bill and legs; three lateral tail-feathers unfotted, and face granulated with fleshly papilae. See RUFFE.

Vanellus. With red legs, dependent crest, and black breast. This is the lapwing or baardar plover of Ray, Willughby, Pennant, &c. See LAPIWING.

Gambara. With red bill and feet; body variegated with yellow and cinereous; beneath white. This is the totanus ruber of Brion, the totanus alter of Willughby and Ray, and gambet of Pennant and Latham.

Icteretes. With red legs; black body, varied with white and ferruginous; and white breast and abdomen. This is the arenaria of Brion, the Hebridal sand-piper of Pennant, the turnstone or sea-dotted of Ray, Willughby, Latham, &c. See TURNSTONE.

The Maricella, or tringa with red feet, blackish tail-feathers, white at the base, grey body, and black breast; or arenaria cinerea of Brion, is a variety.

Strya. With bafe of bill and legs red; tail-feathers white with bands of brown, and many white tail-feathers. This is the totanus frattius of Brion, and frattius sand-piper of Pennant, &c. The totanus navius of Brion is a variety.

Bononiiens. With ochraceous legs; long head and neck; body above black, and beneath white; throat and breast marked with ferruginous spots. The greater lapwing of Latham.

Macularis. With bafe of bill and legs incarnated; body spotted; eye-brows and double band of the wings white. This is the turdus aquaticus of Brion, the spotted tringa of Edwards, and the spotted sand-piper of Pennant.

Lobata. With subulate bill, bent at the apex; pinnated legs, and white undulated breast: the grey croo-footed tringa of Edwards, and grey phalarope of Pennant and Latham. Of this there is a variety, white beneath, black above, with yellowish longitudinal streaks; the band of the wings white; and legs lobated.

Hyperborea. With subulate bill, bent at the apex; pinnated legs; cinereous breast, and fides of the neck ferruginous; the cock croo-footed tringa of Edwards, the small cloven-footed gull of Willughby, and red phalarope of Pennant and Latham.

Erythrops. With red legs, front, rump and tail red and white; body above and wings cinereous-brown; the abdomen ferruginous: the red-legged sand-piper of Latham.

Alpina. Teffaceous-brown, with blackish breast; tail-feathers cinereous, white; legs brownish.

Helvetica. With black bill and legs; beneath black; white vent; tail-feathers white with black bands; the Swifi sand-piper of Pennant.

Ochropus. With the apex of the bill pointed; legs greenish; back brown and green; abdomen and outermost tail-feathers white: the cinclus tertius of Aldbr., Ray, and Will., the opcrorus medius of Gefner, and green sand-piper of Pennant and Latham. Of this there is a variety, viz. Littorea, with smooth bill, cinereous legs, and brown tail-feathers: the thore sand-piper of Pennant; and also another variety, with the back and wings cinereous, with obfolute whitish spots.

Hyphaleuca. With smooth bill; livid legs; body cinereous with black streaks; beneath white: the common sand-piper of Ray, Willughby, and Pennant.

Canus. With smooth bill; cinereous legs; first tail-feathers ferrated; and the outer white unpotted. This is the knot of Pennant, &c. See Knot.

Arca. With black bill and legs; grey body; under and whole face white; collars grey.

Facista. With bill, vertex, hind part of the head, spot near the eyes, and abdomen, black; front and rounded tail white; back cinereous; seven first tail-feathers white.

Cinclus. With bill and legs black; collars white; tail and rump grey and brown. This is the leaff skipe of Ray and Sloane, the wagtail of Brown, the fanderling of Albinus, and the purer of Pennant. The cinclus with brown legs is a variety.

Calidris. With bill and legs blackish; body beneath olivaceous; and rump variegated: the dusky sand-piper of Latham.

Pusilla. With brown bill and legs; body beneath reddish; outer tail-feathers with a white shaft, and variegated rump: the little sand-piper of Pennant; found in St. Domingo, north of Europe, and rarely in England.

Glareola. With smooth bill; greenish legs; body punctated brown and white; breast whitish: the wood sand-piper of Pennant and Latham; found in Sweden.

Reficollis. With black legs; head above and neck frattated with ferruginous and black; and ferruginous throat: the red-necked purue of Latham.

Squatula. With black bill; greenish legs; grey body, beneath whitish: the grey plover of Ray, &c. and grey sand-piper of Pennant and Latham. Of this there is a variety, with black bill and legs; body brown, variegated with white; tail-feathers white with brown bands.

Islandica. With brown bill and legs; body beneath ferruginous; secondary tail-feather with a white margin: the red sand-piper of Pennant.

Cinerea. Cinereous; beneath white; legs obscurcly green; head with black spots; neck obscurcly virgatcd: the ash-coloured sand-piper of Pennant and Latham.

Atra. With black head and neck; back and wings brownish, mixed with black; breast and abdomen cinereous; rump cinereous, undulated with white and black.

Novoboreascens. Obscurcly, beneath white; breast spotted with brown; tail cinereous: New York sand-piper of Pennant and Latham.

Vircata. Obscurcly, beneath white; with yellowish legs; head and neck obscurcly frattated lengthwise with white: frattated sand-piper of Latham.

Borealis. With brown bill and legs; body above cinereous, beneath white; tail and tail-feathers obscurcly.

Novo-terre. Above black, beneath ash-white; bill, purpous wings, tail-feathers, and tail, black; with cinereous legs: Newfoundland sand-piper of Latham.

Variegata. Above varied with brown, black, and red; front and throat pale; neck and breast frattated with whitish and black longitudinally; abdomen white; bill and legs obscurcly: variegated sand-piper of Latham.

Glacialis. With pinnated yellowish legs; apex of black bill dilated; cheeks and throat teffaceous; body above obscurcly, beneath white: plain phalarope of Pennant.

Fusca. With bill, vertex, and legs pinnated and black; body above brownish and cinereous, beneath white; throat cine-
cinereous, tinctured with red: the coot-footed tringa of Edwards, and brown phalarope of Pennant and Latham.

**Cancellatus.** With upper feathers brown, white at the margin; lower white lineated transversely obscurely; pinnated legs obscure.

**Eucoptera.** Black, beneath red, with cinereous bill, green legs, and yellow vent: the white-winged sand-piper of Latham.

**Maritima.** Above varied with grey and white; beneath white, with yellow legs; middle of the back violet; throat and tail obscure: the sedge sand-piper of Pennant and Latham.

**Undata.** Obfuscure, undulated with yellow and white; the rump, the tip of the secondary tail-feathers, and wing-coverts, white; tail cinereous, white at the apex: the waved sand-piper of Pennant and Latham.

**Uniformis.** Wholly dilutely cinereous, with a short black bill: uniform sand-piper of Pennant and Latham.

**Australis.** Above cinereous, spotted brown; beneath reddish; abdomen and rump whitish; tail and tail-feathers obscure; bill and legs black: southern sand-piper of Latham.

**Nevia.** With obscure bill; legs greenish; body above cinereous, spotted with red and black; beneath reddish and white, spotted with obscure or bay: the freckled sand-piper of Pennant and Latham.

**Girnea.** With black bill and legs; body above grey, beneath white; primary tail-feathers brown; tail grey and white at the margin; a band obscurely grey parallel to the margin: the freckled sand-piper of Latham.

**Keptusica.** With cinereous body; black vertex; abdomen blackish, terminating reddish.

**Tringan.** In Geography. See **Trangano.**

**Tringenstein.** A town of Germany, in the principality of Naflau Dillenburg; 6 miles E. of Dillenburg.

**Tringle.** In Architecture, a name common to several little square members, or ornaments; as roglets, liflets, and platbands.

The word is French, where it signifies the fame.

**Tringle** is more particularly used for a little member fixed exactly over every triglyph, under the platband of the architrave; from whence hang down the gutter, or pendant drops.

**Trinidad.** In Geography, a town of South America, in New Granada; 20 miles N.W. of Santa Fé.

**Trinidad,** an island near the coast of South America, about thirty leagues long, and from two to ten broad. This island was discovered by Columbus in his third voyage, who landed here in 1498, and was named by him after the Holy Trinity: beause, says Herrera, having been in great danger in a violent storm, he made a vow to give that name to the first land he should find: soon after which a sailor, in the main-top, faw three points of land, by which the name was in every respect suitable to his vow. The original inhabitants were a colony of Arosovuuki; which fce. The climate is faid by fome to be nattohole; the ifland being very often covered with thick fogs. The abbé Raynal fays that it is excellent, being free from hurricanes. Heavy rains fall from the middle of May to the end of October. It is subject to flight earthquakes, and in the interior are four groups of mountains. The quality of its soil is variously reported; however, Dr Walter Raleigh, who was there fome time in the year 1593, and examined the ifland, gives an account, that the northern part of it is high land; but that its soil is good, proper for planting of fugar-canef, tobacco, &c. The southern coast is well adapted to the culture of coffee; and on the weft is a large harbour, secure in all leasons. Here are several forts of animals, plenty of wild hogs, fih, fowl, and fruit. It also produces maize, cafafva, and other roots, and in general all that is commonly found in America. The Spaniards owed to fit Walter, that they found gold in the rivers of this ifland, but nothing in comparison of what the main land produces. The natives called this ifland "Cairi;" but they themselves had diver names, according to the different parts of the ifland where they dwelt. In 1797, it was taken by the Britifh troops; and by the peace of Aminen, the ifland was ceded to Great Britain. The island of Tobago is separated from Trinidad by a channel called "Trinidad Channel." This ifland, situated at the easter extremity of Terra Firma, from which it is only four leagues distant, is the natural magazine and refort where the contraband traders of Cumana, Barea, Margaretta, and Guiana, make their purchases. The poftion of the ifland is singularly favourable to this commerce. The Spanish coafts, extenfive, solitary, deficiency, and to leeward, offer both to the Englifh and Spaniards the greatest facility for prosecuting it. The gulf of Paria, which washes the western part of Trinidad, receives the waters of the river Guarpiche, which penetrates the province of Cumana. By this river animals for labour and for the fhamble are brought from Terra Firma to Trinidad; and through the fame channel all the contraband articles consumed in this province can ac fend with perfect convenience, or may be landed at several points without the leaft danger. In general, the cargoes which are defined for Barcelona proceed up this river: they are thence distributed to Caraeus and other cities. The mouths of the Oranoko, which eofs the gulf of Paria from fiouth and north, and which are compelled by Trinidad to discharge into the sea by the florm mouths, open to this ifland the commerce of Guiana, whither the florys goes by the river Apurr to Barquifimeto, Truxillo, Varinas, Merida, &c. Dr. Anforfon has given a particular account of a remarkable phefhomenon in this ifland, which is a bituminous lake, or rather plain, denominated Tar-lake, and by the French La Brea, from its refemblance to ship-pitch, and from its anfwering a fimilar intention. It lies on the leeward ifde of the ifland, on a point of land extending into the fea about two miles, and opposite to the high mountains of Paria on the north ifde of the gulf. The headland, or cape, is about 30 feet above the level of the fea, and is the greates elevation on this ifde of the ifland. From the fea it appears a mass of black vitrified rocks; but on clofer examination, it is found to be a composition of bituminous fcorif, vitrified fand, and earth, cemented together: in some parts, beds of cinders only are found. In approaching this cape, there is a frong fulphurous smell, fometimes disagreeable. This smell is prevalent in many parts of the ground to the distance of eight or ten miles from it. The point of land is about two miles, and falls with a decifivity to the fea, the bituminous plain being on the highfeft part of it, and separated from the fea by a margin of wood which surrounds it. It appears at firft like a lake of water; and in hot and dry weather its surface, about an inch deep, is liquid, whence it obtained the appellation of lake. Its form is circular, about three miles in circumference. Its more common conftance and appearance are those of pit-coal, the colour being rather greyer. No appearance of sulphur is difcernible, though, in passing over it, a frong fulphurous smell was experienced. Dr. Anforfon apprehended that this bituminous fulbfance is the bitumen aphalame of Limeneus. By a gentle heat it was rendered ductile; and mixed with greafe or common pitch, it is much used for the bottoms of ifhips; and he conceives it to be a prefervative against the infect called the borer, to deluctive
destrucrive to ships in that part of the world. Every part of the country, he says, to the distance of 30 miles round, has the appearance of being formed by convulsions of nature from subterraneous fires; and the whole island, he thinks, is formed of an argillaceous earth, either in its primitive state, or under its different metamorphoses. This argillaceous earth is formed, as he conceives, from the sediment of the ocean, and its formation is easily accounted for from the situation of Trinidad. The great influx of currents into the gulf of Paria, from the coasts of Brazil and Andalusia, must bring down a vast quantity of light earthy particles from the mouths of the numerous large rivers which traverse those parts of the continent; but the currents being repelled by the sides of adjacent mountains, eddies and smooth water will be produced when they meet and oppose one another; and, therefore, the earthy particles would subside, and form banks of mud, and by the accession of fresh accumulations form dry land; and thus such a tract of country as Trinidad must be formed. The cauces fill operate, for the island is daily increasing on the leeward side, as is visible in the mud-beds that extend a great way into the gulf, and are there continually augmented. But from the great influx from the ocean at the south end of the island, and its egress to the Atlantic again through the Bocas, a channel must ever exist between the continent and Trinidad. N. lat. 9° 48' to 10° 42'. W. long. 60° 6' to 61° 30'.

TRINIDAD, La, a town of South America, in the province of Moxes; 200 miles N.E. of La Plata. S. lat. 14° 46'. W. long. 65° 50'.

TRINIDAD, a sea-port town of the island of Cuba, situated in a bay on the south coast of the Havana. N. lat. 51° 56'. W. long. 80° 18'.

TRINIDAD, La, or Sanfpective, a sea-port town of Mexico, in the province of Guatemala; 80 miles E.S.E. of Guatemala. N. lat. 14° 3'. W. long. 91° 9'.

TRINIDAD, La, a town of Mexico, in the province of Veragua, on a river which runs into the gulf of Mexico; 18 miles S.E. of La Conception.

TRINIDAD, La, a town of Mexico, in the province of Nicaragua, on the east coast of Nicaragua lake; 30 miles N.W. of St. Carlos.

TRINIDAD, a town of South America, in the province of Paraguay; 170 miles S.E. of Asunciation.

TRINIDAD, a small island in the South Atlantic ocean, and one of those called "Martin Vas's Islands;" taken possession of by the Portugueze about the year 1783, who keep a small garrison here, but, according to M. Perouze, ill furnisched. This island presents nothing to the eye but a rock, almost entirely ferifer. A little vudure, and a few shrubs, are alone to be seen in the narrow pasies between the mountains. It is in one of these vallyes situated in the south-east quarter of the island, and about three hundred toises wide, that the Portugueze have formed their establishment. Nature certainly did not intend this rock to be inhabited; neither men nor animals being able to find a subsistence upon it; but the Portugueze were afraid lest some European nation should avail themselves of the vicinity, and carry on a contraband trade with the Brasis. S. lat. 26° 31'. W. long. of the south point 26° 37'.

TRINIDAD Bays, a small open bay or cove on the west coast of North America. N. lat. 41° 3'. E. long. 236° 6'.

TRINITARIANS, a term used very variously, and arbitrarily: frequently it stands as a common name for all persons who have sentiments on the mystery of the Trinity, different from those of the Catholic church.

Sometimes it is more immediately restrained to some one or other particular class of such persons.

It is now applied to the orthodox themselves, in contradistinction to the others who are then called Antitrinitarians, or Unitarians, who deny or impugn the doctrine of the Trinity.

Thus the Socinians and others called the Athanarians, Trinitarians.

The Trinitarians of the present age, and especially those who, in England, have written on the subject of the Trinity, are far from being agreed in their opinions, and, therefore, ought to be called very differently from one another.

A late writer (Priestley's Hist. Corrupt. of Chrillity, vol. i. p. 147.) thinks that they are all reducible to two classes, viz. that of those who believe that there is no proper divinity in Christ, besides that of the Father; and the class of Trinitarians, who maintain that there are three equal and distinct Gods. Dr. Waterland and the rest of the Athanarians affirm three proper distinct persons, equally equal to and independent upon each other, yet making up one and the same being. Mr. Howe (Works, vol. ii. p. 560—568.) seems to suppose that there are three distinct eternal spirits, or distinct intelligent hypostases; each having its own distinct, singular, intelligent nature, united in such an inexplicable manner, as that upon account of their perfect harmony, consent, and affection, to which he adds their mutual self-consciousness, they may be called the one God, as properly as the different corporeal, sentient, and intellectual natures united may be called one man. Bishop Pearson (on the Creed, p. 134, &c. 322, &c.), bishop Bull (Serm. vol. iv. p. 829.), and Dr. Owen (on the Heb. i. 3. p. 55, &c.), are of opinion, that though God the Father is the fountain of the Deity, the whole divine nature is communicated from the Father to the Son, and from both to the Spirit; yet so as that the Father and Son are not separate, or separable from the divinity, but do equally exist in it, and are most intimately united to it. Dr. Thomas Burnet (Script. Doctr. p. 173.) maintains one self-existent and two dependent beings; but affirms, that the two latter are so united to and inhabited by the former, that by virtue of that union divine perfections may be ascribed and divine worship paid to them. In this opinion Dr. Doddridge is said to have concurred. Dr. Wallis (Lett. on the Trin.) thought, that the distinction between the three persons was only modal; which seems, says Dr. Doddridge, to have been the opinion of archbishop Tillotson. (Tillotson. Serm. vol. i. p. 492—494.) Dr. Watts (Diff. N. 7) maintained one supreme God dwelling in the human nature of Christ, which he supposeth to have exalted the first of all creatures; and speaks of the divine Logos, as the wisdom of God, and the Holy Spirit, as the divine power, or the influence and effect of it; which, he says, is a Scriptural person, i.e. spoken of figuratively in scripture under personal characters. Doddridge's Lectures, p. 402, &c.

TRINITARIANS also denote an order of religious, instituted in honour of the Trinity, for the redeeming of Christian captives from the infidels; vulgarly called Mathurins, and brothers of the redemption.

They are clothed in white, and hear on the Romans a crost, partly red and partly blue; by which three colours, white, red, and blue, is suppos'd to be represented the mystery of the Trinity; but the habit of this order is different in different provinces.

The Trinitarians made it their business to go and ransom Christians held in slavery in the republics of Algiers, Tunis, and Tripoli, and the rates of Morocco. They have a rule peculiar to themselves; though several historians rank them among the obscurers of the rule of St. Auguin.
The order had its rise in 1198, under the pontificate of Innocent III. The founders were John de Matha and Felix de Valois; the first of Faucon in Provence; the second, not of the royal family of Valois, as some have imagined, but thus called, in all probability, as being a native of the country Valois.

Gauthier of Chatillon was the first who gave them a place in his lands to build a convent; and afterwards became the chief of the whole order: Honorius III. confirmed their rule; and Urban IV. appointed the bishop of Paris and others to reform them: they did it; and the reform was approved, in 1267, by Clement IV.

This order possessed about 250 convents, divided into thirteen provinces; of which six are in France, three in Spain, one in Italy, and one in Portugal. And formerly there was one in England, another in Scotland, and a third in Ireland.

Broughton, and some other writers, make a distinction between the order of the redemption of captives, and the fraternity of the Holy Trinity.

TRINITARIANS, Barefooted, are a reform of this order, made in Spain, in a general chapter held in 1594, where it was resolved, that each province should establish two or three houses, where the primitive rule should be observed, and where the religious should live up to a greater austerity, use coarser clothes, &c. and yet should have the liberty of returning to their ancient convent, when they thought fit.

Don Alvares Bafan, intending to found a monastery at Valdepeñas, and desiring to have it occupied by barefooted religious, it was agreed to add nudity of feet to the reform, that the Trinitarians might have the benefit of that establishment. The reform afterwards grew into three provinces, and was at length introduced into Poland and Rúflia, and thence into Germany and Italy.

There are also barefooted Trinitarians in France, established by F. Jeron Hallies, who, being sent to Rome to solicit the first reform mentioned above, not content with this, carried it farther, and obtained a permission of pope Gregory, to add a coarser habit and nudity of feet thereto. He began with the convent of St. Dionysius at Rome, and thence of Aix in Provence.

In 1670, there were houses enough of this reform to make a province, and, accordingly, they held their first general chapter the same year.

There are also nuns of the Trinitarian order established in Spain by St. John de Matha himself, who built them a convent in 1201. Those who first took the habit were only oblates, and made no vows; but in 1201, the monastery was filled with real religious, under the direction of the infanta Constançia, daughter of Peter II. king of Aragon, who was the first religious, and the first superior of the order.

There are also barefooted nuns of this order, established at Madrid about the year 1612, by Frances de Romero, daughter of Julian de Romero, a lieutenant-general in the Spanish army.

Lastly, there is a third order of Trinitarians.

TRINITE, in Geography, a town of France, in the department of the Stura; 4 miles S.W. of Bene. Also, a name given to two islands and a rock in the South Atlantic ocean; uninhabited and little known. S. lat. 19° 30'. W. long. 40°.—Allo, a town of France, in the department of the Morbihan; 15 miles E. of Pontivy.

TRINITY, TRINITAS, TRIAS, TRIAD, in Theology, the ineffable mystery of three persons in one God, Father, Son, and Holy Spirit.

It is an article in some systems of theology, that there is one God, an unity in nature and essence, and a Trinity of persons. The term Trinity implies the unity of three, the unity of three divine persons really different, and the identity of an indivisible nature: the Trinity is a ternary of divine persons of the fame essence, nature, and substance.

Perfon is defined an individual, reasonable, or intellectual substance; or an intellectual and incommunicable substance.

The hypostasis, or substance, is what constitutes the person. There are three in the Holy Trinity three persons, Father, Son, and Holy Spirit, which have all things in common, except their relations; whence that axiom in theology comes to have place, in the divine persons there is no distinction, where there is no opposition of relation.

The Father is the first person in the Holy Trinity, by reason the Father alone produces the Word, by the way of understanding; and with the Word produces the Holy Spirit, by way of will.

Here it is to be observed, that the Holy Spirit is not thus called from his spirituality, that being common and essential to all the three persons; but from the passive spiration (as some popish theologians express the manner in which the personaly of the Holy Spirit is derived from the Father and Son), which is peculiar to him alone.

Add, that when one person in the Holy Trinity is called first, another second, and another third, it must not be understood of a priority of time, or of nature, which would imply some dependence; but of a priority of origin and emanation, which confits in this, that one person produces the other, in such manner, as that the person which produces cannot be, or be conceived, without that produced.

Those who maintain the doctrine of the Trinity allege, that the names titles, attributes, works, and worship, are ascribed by the sacred writers to the Father, Son, and Holy Spirit: nevertheless they contend, in different ways, for the proper unity of the divine nature. For the sentiments of some of the chief modern Trinitarians, see TRINITARIANS: and for the sentiments of others, who have rejected what has been usually denominated the orthodox doctrine of the Trinity, see Arians, Macedonians, Noetians, Sabellians, Semi-arians, Socinians, and Unitarians. See also TRINITISM.

It is observed by Dr. Waterland and many other writers, that the term Trinity first occurs in the works of Theophilus, bishop of Antioch, about the year 180. Theophil. ad Autolyi. lib. ii. c. 14. p. 148. 150, ed. Wofilli.

But at this time the words, persons, and substances, were not in use; however, they were introduced on occasion of the disputes with Praxias, Noetus, and Sabellius, either by Clement of Alexandria, or by Tertullian.

For the punishment inflicted by the English law on those who deny the Trinity, see HERESY.

Many of the heathens are said to have had a notion of a Trinity. Stueth. Eugub. de Peren. Philos. lib. i. c. 3. observes, that there is nothing in all theology more deeply grounded, or more generally allowed by them, than the mystery of the Trinity. The Chaldaeans, Phænicians, Greeks, and Romans, both in their writings, and their oracles, acknowledged that the Supreme Being had begot another Being from all eternity, which they sometimes called the Son of God, sometimes the Word, sometimes the Mind, and sometimes the Wisdom of God, and asserted it to be the creator of all things.

Among the sayings of the Magi, the descendants of Zoroaster, this is one, Παντα ἐγουταί οὐάμαν, θαρείους, νους: the Father finished all things, and delivered them to the second Mind.
Mind. The Egyptians called their Trinity, Hemepha, and represented it by a globe, a serpent, and a wing, dispensed into one hieroglyphic symbol. Kircher, Gale, &c. suppose the Egyptians learned their doctrine of the Trinity from Joseph and the Hebrews.

The philosophers, says St. Cyril, owned three hypostases, or persons; they have extended their divinity to three persons, and even sometimes used the word Trias, Trinity: they wanted nothing but to admit the confubstantiality of the three hypostases, to signify the unity of the divine nature, in exclusion of all triality with regard to difference of nature; and not to hold it necessary to conceive any inferiority of hypostases.

We learn from Dr. Cudworth, that, besides the inferior gods, generally received by all the Pagans, (viz. animated stars, demons, and heroes,) the more refined of them, who accounted not the world the supreme deity, acknowledged a Trinity of divine hypostases superior to them all. This doctrine, according to Platonius, is very ancient, and observed to be affected even by Pythagoreans. Some have referred its origin to the Pythagoreans, and others to Orpheus, who adopted this principle, called Phanes, Uranus, and Cronus. Dr. Cudworth apprehends, that Pythagoras and Orpheus derived this doctrine from the theology of the Egyptian Hermes; and, as it is not probable that it should have been discovered by human reason, he concurs with Proclus in affirming, that it was at first a theology of divine tradition, or revelation, imparted first to the Hebrews, and from them communicated to the Egyptians and other nations; among whom it was depraved and adulterated. Cudw. Intell. System, book i. c. 4.

Plato, and some of his followers, speak of a Trinity in such terms, that the primitive fathers have been accused of borrowing the very doctrine from the Platonic school; but M. Mourguès, who has examined the point, affirms, that nothing can be more absurd, than to suppose the Platonic Trinity brought into the church; and to have recourse to the Platonism of the fathers to discredit their authority with regard to this dogma.

Trinity, Friery, or Fraternity of the Holy, is a society instituted at Rome, by St. Philip Neri, in 1548, to take care of pilgrims coming from all parts of the world to that capital, to visit the tombs of St. Peter and St. Paul.

In 1558, pope Paul IV. gave the fraternity the church of St. Benedict, to which they gave the title of the Holy Trinity. Since that time, they have built close by a very ample hospital for pilgrims, and persons on the recovery.

The fraternity has since become very considerable, and most of the nobile of Rome, of either sex, have done it the honour to be members of it.

Trinity, Congregation of the Holy, is a congregation of twelve priests established in the hospital of the fraternity just mentioned, to take care of pilgrims, and persons on the recovery.

Trinity, Order of the Holy. See Trinitarians.

Trinity-Sunday, is the next Sunday after Whit-Sunday, thus called, because on that day was anciently held a festival (as it still continues to be in the Romish church) in honour of the Holy Trinity. The observance of this festival was first enjoined by the sixth canon of the council of Arles, in 1206; and John XXII. who distinguished himself so much by his opinion concerning the beatific vision, is said to have fixed the office for this festival in 1354.

Trinity-Herb, in Botany. See Violet.

Trinity-House, is a kind of college at Deptford, belonging to a society of seafaring persons, founded for the regulation of seamen, and security and convenience of ships and mariners on our coasts.

This society was incorporated by Henry VIII. in 1515, who confirmed to them not only all the ancient rights and privileges of the mariners of England, but also their several pothosion; which, together with various grants of queen Elizabeth and king Charles II. were confirmed by letters patent of the 1st of James II. in 1685; under the name of the master, wardens, and affiliates of the guild or fraternity of the most glorious and undivided Trinity, and of St. Clement, in the parish of Deptford Strand, in the county of Kent.

This corporation is governed by a master, four wardens, eight affiliates, and eighteen elder brethren: the inferior members of the fraternity, denominated younger brethren, and chosen among the masters and mates expert in navigation, are of an unlimited number, and serve for supplying vacancies among the thirty-one elder brethren. The master, &c. of this corporation, are invelled by charter with a power to examine the mathematical children of Christ's Hospital, to examine the masters of his majesty's ships; to appoint pilots for conducting ships in and out of the river Thames; and to amerce such as shall act as masters or pilots without their approbation in a fine of 20/-; to settle the several rates of pilotage, and erect light-houses, and other sea-marks, on the several coasts of the kingdom, for the security of navigation; to prevent aliens from serving on board English ships, without their licence, under penalty of £l. for each offence; to punish seamen for desertion or mutiny in the merchant service: to hear and determine the complaints of officers and seamen in this service, under an appeal to the court of admiralty; and to grant licences to poor seamen (non-freemen) to row on the river Thames.

To this company belongs the ballast-office, for cleaning and deepening the river Thames, by taking from it a sufficient quantity of ballast for the supply of all ships that sail out of the river; in which service sixty barges, of the burden of thirty tons, and two men each, are constantly employed: all ships taking in ballast pay to them 1 2s. 6d. a ton.

This corporation is empowered by charter to purchase lands, &c. to the amount of 500l. per annum, and also to receive charitable benefactions to the like amount. They have also light-houses, to which all ships pay a halfpenny per ton.

Out of the income of this corporation, about three thousand poor seamen, their widows and orphans, are annually relieved, at the expense of about 6000l.

The house in which the brethren of this corporation usually meet for the dispatch of business, is on Tower-Hill. (See London.) They have three hospitals, two at Deptford, and one at Mile-End, which last is designed for decayed sea-officers, masters of vessels, pilots, and their widows.

Trinity Term. See Term.

Trinity, or La Trinié, in Geography, a sea-port town of the island of Martimico: the harbour is formed on the south-east side by the point Caravelle, which is two leagues in length; and on the other side by a very high hill, about 350 or 400 paces in length, which only joins to the main land by an illusory not above 200 feet broad. The east side, opposite to the bottom of this bay, is flapped up by a chain of rocks, which appear level with the water when the ebb tide is spent. The town here is a very thriving place, being the residence of several merchants, as well as of the lieutenant-governor of the Cabes-terre; and much frequented by shipping, especially from Nantes; the cargoes of which are here to meet with a quick sale, the people, who
who are very numerous in the adjacent parts, choosing rather to buy what they want near at hand, than to fend for it from the Baileterre. Besides, during the hurricane season, ships have a safe station in this port; another advantage they have here is, that when they set out for Europe, they are to the windward of all the islands, and save about 300 leagues in their passage, which they would find by the way of St. Domingo, or Porto Rico. N. lat. 14° 53'. W. long. 61° 8'.

TRINITY Bay, a large but not a very deep bay of the South Pacific ocean, on the north-east coast of New Holland, between Cape Grant and Cape Tribulation.—Also, a large bay on the east coast of Newfoundland. N. lat. 48°. W. long. 53° 10'.

TRINITY Harbour, a cove on the north-west end of Trinity bay, on the east coast of Newfoundland. N. lat. 48°. W. long. 53° 10'.

TRINITY Inlet, a bay of the North Pacific ocean, on the west coast of North America; 30 miles S. of Queen Charlotte's Sound.

TRINITY Island, an island in the North Pacific ocean, discovered by captain Cook. Captain Vancouver passed this coast in the year 1794, and says it appeared to be divided into two islands, with several others of inferior size lying to the north, between them and the land about Cape Trinity. The eait point of the easternmost is, according to his observations, situated in N. lat. 56° 33'. E. long. 206° 47'.

TRINUMGELD, or TRINUMGELD, a compensation used among our Saxon ancestors for great crimes, which were not abhored but by paying a fine thrice nine times. See GELD.

TRINK, in our Statutes, is used for a fishing-net.

2 Hen. VI. cap. 15. Blount.

TRINO, in Geography, a town of France, in the department of the Seine, lately belonging to the duchy of Montferrat, situated in a marshy soil: the country near produces great quantities of corn, rice, and cheese, by some supposed equal to those of Piacenza or Parma. The fortifications are for the most part demolished. It has one collegiate and several parochial churches, and religious houses; 10 miles S.S.W. of Vercelli. N. lat. 45° 17'. E. long. 8° 16'.

TRINOBANTES, TRINOVANTES, or TRINOVANTES, in Ancient Geography, were inhabitants of Britain, situated next to the Cantii northward, and occupied, according to Camden and Baxter, that country which now composes the counties of Essex and Middlesex, and some part of Surrey. But if Ptolemy be not mistaken, their territories were not so extensive in his time, as London did not then belong to them. The name of this British nation seems to be derived from the three following Britih words; Tri, Now, Hunt, which signify the inhabitants of the new city. This name was perhaps given to them by their neighbours, on account of their having newly come from the continent into Britain, and having there founded a city called Tri-Now, or the New City, the most ancient name of the renowned metropolis of Britain. The Trinobantes had come hither lately from Belgium, that they seem hardly to have been firmly established in Britain, at the time of the first Roman invasion. For their new city, which soon after became so famous, was then so inconsiderable, that it is not mentioned by Caesar, though he must have been within sight of the place where it was situated. They were then at war with their neighbours, the Catuvellauni, whose king, Calibelenus, commanded the confederated Britons against the Romans; and, on this account, the Trinobantes were amongst the first of the British states who deferred that confederacy and submitted to Caesar. They submitted again to the Romans, on their next invasion in the reign of Claudius, with the same facility, and almost for the same reason. For, in the interval between the invasion of Julius and that of Claudius, the Catuvellauni had reduced them under their obedience; and, in order to emancipate themselves from this subjection to their neighbours, they put themselves under the protection of the Romans. But the Trinobantes soon became weary of their obedience to their new masters. For the Roman colony at Camulodunum, which was within their territories, depriving some of them of their estates, and oppressing them several other ways, they joined in the great revolt of the Britons under Boadicea, and shared very deeply in the miseries of that revolt. From that time the Trinobantes remained in peaceable submission to the Romans, as long as they continued in Britain. The country of the Trinobantes was greatly valued and much frequented by the Romans, on account of the excellence of its soil and climate, and the many advantages of its situation. That fagacious people soon fixed their eyes on the new town of the Trinobantes; and observing its admirable situation for health, for pleasure, and for trade, great numbers of them settled in it, and giving it the name of Londonium from its situation, and of Augusta from its grandeur, it became in a little time the largest and most opulent city in this island. In the reign of Nero, as Tacitus informs us, London was become a city highly famous for the great conflux of merchants, her extensive commerce, and plenty of all things. No fewer than seven of the fourteen journeys of Antoninus begin or end at London; a plain proof, among many others, that this city was the capital of Britain in the Roman times, as it is at present the great and flourishing metropolis of the British empire. Camulodunum, now Malden in Essex, was the seat of the first Roman colony in Britain, and a place of great beauty and magnificence in these times; though at present few or no vestiges of its ancient grandeur remain. Caerfaromagus, from its pompous name, was probably a place of some note in the Roman times; but it is now entirely ruined, that it is difficult to discover the ground where it once stood; some of our antiquaries placing it at Chelmsford, and others at Dunmow. The Colonia of Antoninus was probably Colchester, and Durulumi, as some think, Leiston, but, according to others, Waltham. But though the county of Essex was certainly very much frequented by the Romans, who erected many noble works in it, yet time, cultivation, and various accidents, have made it great a change in the face of that country, that very few vestiges of these works are now remaining. The territories of the Trinobantes were included in that Roman province which was called Britannia Prima. See CAMULODUNUM.

TRINODA Necessitas, in our Ancient Cullons, a threefold necessary tax, to which all lands are liable; viz. expeditio, a capitation, and a tithe; going to the wars, and repairing of bridges and of calls.

These were the three exceptions anciently permitted in the king's grants of land to the church, after the words that freed them from all secular service.

TRINODA, or TRINODA Terra, in some Ancient Writers, denotes a quantity of land containing three perches.

TRINOMALY, in Geography, a town of Hindooitan, in the Carnatic, near which the troops of Hyder Ally were defeated by the British, under colonel Smith in the year 1768, with the loss of the greatest part of their artillery; 45 miles S.S.W. of Arcot. N. lat. 12° 13'. E. long. 79° 10'.

TRINOMIAL or TRINOMINAL Root, in Mathematics, is a root consisting of three parts, or monomes, connected together by the signs + or —.
Such is \[ \frac{x^3 + y^3 + z^3}{a + b - c}. \] See Involution.

Trio, in Italian Terzetto, a vocal composition in three principal parts, exclusive of the accompaniments. In chamber duets and trios, such as those of Steffani and Clari, in which each part repeats the same words, the great merit was pure harmony, and ingenious subjects of fugue and imitation. But in the dramatic duets and trios of modern times, the several parts have different words and different passions to express. In an opera trio, the several characters are dialogued, and seldom singing together; and in each part, there a beautiful, interesting, and characteristic melody is required. But in moments of passion, where the three parts are united, expressing with energy and passion their several complaints and accusations, it is that, with the organ, an interest will be produced at once by combinations of poetry, harmony, and figural effects.

There is nothing more difficult, perhaps, for the poet to write, or the composer to set, than a dramatic trio.

Trioctile, in Astrology, an aspect, or situation, of two planets with regard to the earth, when they are three octants, or eight parts of a circle, i.e. 135 degrees, distant from each other.

This aspect, which some call the sesquiangular, is one of the new aspects superadded to the old ones by Kepler.

Trioidea, in Botany, from \( \tau \tau \tau, \tau \tau \tau, \tau \tau \tau, \) and \( \tau \tau \tau \), a tooth, alluding to the three, nearly equal, teeth, of the outer valve of the corolla. — Brown Prodr. Nov. Holl. v. 1. 182. Kunth Nov. Gen. et Sp. v. 1. 126. — Claph and order, Triandria Digynia. Nat. Ord. Gramina. Eff. Ch. Calyx, many- or two nearly equal valves. Outer valve of the corolla with three, nearly equal, teeth; the middle one straight. Nectary of two scales.

A genus of perennial, rather rigid grasses, with panicle flowers, and the habit of a Poa or Festuca. Mr. Brown suspects Festuca decumbens of Linneus, which is Poa decumbens of Sm. Fl. Brit., and Dautonia decumbens of Decandolle, ought to be removed hither. Our learned friend has hinted to us, that the two South American species of Humboldt and Bonpland, here subjoined to his own New Holland, though they answer to the generic character, are considerably different in appearance from the rest.

1. T. pungens. Br. n. 1. — "Panicle rather close, erect; with alternate, softly simple, branches. Spikelets lanceolate, of about four flowers. Outer valve of the corolla woolly at the edges and keel, in its lower half. Leaves spreading, involute, pungent; sheaths of the lower ones villos.

— Found by Mr. Brown, in the tropical part of New Holland.

2. T. prosera. Br. n. 2. — "Panicle loose; its branches undivided, spike. Spikelets somewhat filamented, of three or four flowers. Calyx roughish. Outer valve of the corolla very smooth at the keel, and nearly so at the edges. Leaves involute, rather lax; their sheath with a silky beard." — From the same country.


4. T. microstachya. Br. n. 4. — "Panicle elongated, rather close; its branches undivided, spike. Spikelets about three-flowered. Glumes rough. Outer valve of the corolla blunt, with three very short teeth; its keel and edges smooth. Leaves involute; their sheath bearded." — From the same country as the foregoing.


at the base. Leaves involute, spreading, rigid, pungent." — Native of the southern coast of New Holland.

6. T. ambiguus. Br. n. 6. — "Panicle lax; its branches half-woolly, undivided, spike. Spikelets nearly fertile, linear, of eight or ten flowers. Outer valve of the corolla silky at the edges; inner fringed. Leaves involute. Stirpes torn." — Found in the tropical part of New Holland, by Mr. Brown, who doubts whether this be a genuine species of Triodia. Its aspect is perfectly that of a Poa.

7. T. pulchella. Kunth as above, n. 1. t. 47. — Panicle leafy, of about three flowers. Spikelets about five-flowered. Corolla hairy at the base; its inner valve toothed. Scyons trailing. Leaves rough. — Native of cool dry exposed situations in Mexico, flowering in September. Root fibrous, with trailing runners, taking root as they go, and sending up flims two or three inches high, solitary or aggregate, whose simple panicle is accompanied by many awl-shaped leaves, resembling the radical foliage.

8. T. arenacea. Kunth n. 2. t. 48. — Panicle close. Spikelets about five-flowered. Corolla hairy in its lower half; inner valve entire. Scyons trailing. Leaves slightly hairy. Native of valleys in Mexico, flowering in April. This increases by runners, like the last. But the flims are twice as tall; the panicle leaflets, rather compound, resembling a Festuca; the leaves flat, blunter, not unlike Poa annua.

Trioion, the title of an ecclesiastical book in the Greek church, which comprehends the office of a particular part of the year. This book is called Triodion, because it contains the hymns or odes of three triplpes. The hymn of two triplpes is called "Diodon;" and that of four, "Tetradon." Leo Allatius.

Trioia, in Geography, a town of the Ligurian republic; 18 miles N.E. of Vintimiglia.

Triond, a town of European Turkey, in Albania; 12 miles W.N.W. of Aledia.

Trionda, a small island in the gulf of Saltilia, near the coast of Nafplia. N. lat. 36° 36'. E. long. 35° 26'.

Triones, in Astronomy, a sort of constellation, or assemblage of seven stars in the Ursa Major, popularly called Charlie's Wain.

From the Septem Triones, the north pole takes the denomination Septentrio.

Trionto, in Geography, a river of Naples, which runs into the gulf of Tarento; 10 miles E. of Rossano. Also, a cape of Italy, on the coast of Calabria Citra, in the gulf of Tarento, at the mouth of the Trionto. N. lat. 39° 46'. E. long. 16° 54'.

Trionum, in Botany. (See Hibiscus.) There is a \( \gamma \) in Theophrastus, said to be one of the Mallow tribe; like the Hibiscus in question, whose leaves, having three lobes, are supposed to function the present application of this name.

Triopthalmus, formed of \( \gamma \), three, and \( \sigma \), a name given by authors to such pieces of agate, or other semi-pellucid stones, as happen to have three small circular spots, resembling eyes, upon them; these are of the nature of the common agate, &c. The spots are mere accidental varieties in the disposition of the veins, and do not make a distinct species of Rome.

Triopium, in Ancient Geography, a country or town, or, as others say, a promontory of Caria, near the sea, and belonging to the Cnidians. On this promontory was a temple of Apollo, where the Dorians celebrated games in honour of this god. At this temple was held an assembly of the Dorians of Asia, similar to the assemblies of the European Greeks at Thermopylae. See Cape Cnus.

Trip-
**TRIOPTERIS**, in Botany, from τρις, three, and πτερον, a wing, very expressive of the three prominent membranous wings of each capsule, at least in the original species. —Linn. Gen. 228. Schreb. 307. Willd. Sp. Pl. v. 2. 743.

**Results.** The plant which was first described as *Triopteris* was *T. acutifolia*, a small fern, native to the West Indies. It was later discovered that the species cultivated in Jamaica is not *T. acutifolia*, but a different species, *T. jamaicensis*. The plant is indigenous to the West Indies and is found in the Antilles. The fronds are small, with three nearly equal wings, and the capsule is surrounded by the fronds. The plant is a tender exotic plant, which constantly requires the protection and warmth of a greenhouse or frame in this climate.

**Method of Culture.** This plant is propagated and increased by seeds, cuttings of the branches, and layers. In striking roots, the cuttings are frequently used for the purpose of propagating the plant. The plants, after they are raised, are always to be kept in pots, which are to be placed amongst those of the greenhouse or frame kinds. They should have occasional waterings during hot weather.

They afford a desirable variety in collections of the above kinds of plants.

**TRIARCHIS**, a word used by some to express a man who has three teeth.

It is also used as the name of a buzzard; and of a plant, called ladies' traces.

**TRIORS** or **TRIERS**, in Law, such as are chosen by the court to examine whether a challenge made to the panel of jurors, or any of them, be just or not.

The triors, in case the first man called be challenged, are two indifferent persons named by the court; and if they try one man and find him indifferent, he shall be sworn; and then he and the two triors shall try the next; and when another is found indifferent and sworn, the two triors shall be superceded, and the two first sworn on the jury shall try the reef.


**Gen. Ch. Cal.** Perianth inferior, minute, permanent, in five deep segments. Cor. Petals five, roundish, with long claws. Stam. Filaments ten, capillary, slightly connected at the base, five longer than the intermediate ones; anthers simple, roundish. Pilt. Germen superior, three-leaf; styles three, erect; stigmas obtuse. Peric. Capsules three, oval, not burling, each with one, three, or four, flat, membranous, dative; Seeds solitary.

Eff. Ch. Calyx in five deep segments. Petals five, roundish, with slender claws. Filaments combined at the base. Capsules three, single-feathered, each with one, three, or four, membranous wings.


6. **T. acuminata.** Pointed-leaved Triple-wing. Willd. n. 6. (Tetrapetes acuminata; Cavan. Diff. n. 596; t. 262. f. 2.) —Leaves elliptic-oblong, pointed, smooth. Umbels panicled, terminal. Capsules with four wings; the two lowermost smallest. —Found in Cayenne by M. Stoupy.

7. **T. buxifolia.** Box-leaved Triple-wing. Willd. n. 7. (Tetrapetes buxifolia; Cavan. Diff. n. 597; t. 262. f. 1. Banisteria microphylla; Jacq. Obs. faece. 3. t. 56.) —Leaves elliptic-oblong, bluntish, smooth. Umbels foliaceous, terminal. Capsules with four nearly equal wings. Native of the Antilles. The leaves are much smaller than any of the foregoing, being hardly above an inch long, and nearly sessile.

8. **T. citrifolia.** Orange-leaved Triple-wing. Swartz Ind. Occ. 857. Willd. n. 8. (Tetrapetes inaequalis; Cavan. Diff. n. 594; t. 262. Acer sacrandum triococcos, folis citri, flore luteo minore; Planch. t. 9. t. 16.) —Leaves ovate, acute, smooth. Umbels axillary, flattened. Capsules with four wings; the two lowermost smallest. Native of woods on the mountains of Jamaica. The frond is shorter than the tube, in five deep, erect, rounded lobes, the lower ones smallest. Stam. Filaments five, thread-shaped, the length of the corolla, and inserted into its tube; anthers oblong. Pilt. Germen inferior, roundish; style cylindrical, the length of the stamens; stigma thickish. Peric. Berry obovate, bluntly triangular, of three cells. Seeds solitary, bony, bluntly triangular, obtuse, furrowed.

Eff. Ch. Corolla of one petal, scarcely longer than the calyx, nearly regular. Calyx in five deep segments. Berry inferior, of three cells, with solitary seeds.

TRIPELAAIDEÆ, in Botany, the 5th order among the
Fragmenta of Linnaeus, confifts of Juncus, Aphyllantes,
Triphelia, Scheuchzeria, Elegia and Refio in one section;
then Flagellaria, Colomus, Butomus, Althina and Sagittaria.
Linnaeus has hinted, in a manuscript note, that the three
last ought probably to be removed to an order near akin
to the Palma, or a subdivision thereof. The name alludes
to the three petals, for so we must call them, though Linnaeus,
like the French botanists, has spoken of them, sometimes,
as petal-like leaves of the calyx.

TRIPETALOUS FLOWERS, in Botany, such which
confift of three leaves, which are called petals, to differ
from the leaves of plants.

TRIPETYLY, in Geography, a town of Hindoosfan,
in the Carnatic, where was a celebrated pagoda, reftored to
by vast crowds of pilgrims from all parts of Hindoosfan;
49 miles S.S.W. of Nellore. N. lat. 12° 45' E. long.

TRIPHACA, in Botany, was so named by Loureiro,
from τρίς, three, and ρέ, a lentil, or, as he takes the liberty
of saying, a legumes, in allusion to the three leguminous feed-
vellets.—Loureiro. Cochinch. 577.—Clafs and order, Mon-
ocota Polyandra.

This is a large tree, found on the eastern coast of Africa.
Mr. Brown has suggested to us that it is undoubtedly a
Sterculia; see that article. In species it seems to come
near S. Balangbas and its allies. The number of the foli-
ces doublets varies.

TRIPHARMACUM, an ointment in the late London
Difpensatory, so called from its being composed of three
ingredients: the prescription is this: Take common platter
four ounces; oil olive two ounces; vinegar one ounce: let
them over a gentle fire, and stir them continually till they
become an ointment.

TRIPHASIA, in Botany, so named by Loureiro,
Cochinch. 152, (omitted in his index,) from τρίς, three,
thre-Fold, because of the three leaflets, petals, and calyx-teeth,
proves, by his experiments at Sir Joseph Bank's, to be no
other than Limonia trifoliata of Linnaeus.

TRIPHOLINUS MOSG, in Ancient Geography, a moun-
tain of Italy, in Campania. Phly speaks of the vines which
grew upon the mountain, and calls the territory which pro-
duced them, Tripholinus ager. These vines are also mentioned

TRIPHTHONGUE, in Grammar, an affemblage, or
concurrence, of three vowels in the fame syllable; as in quaef.
Quinellian, lib. i. cap. 6. denies the exiftence of thrif-
thongues; and afferts, that there never was any syllable of
three vowels, but that one of them was always turned into
a confonant: Scipion afferts the contrary. However
this may be in the Latin and Greek, which were the only
languages Quinellian underftood, it is certain there are
ferval languages in Europe where thriphthongues are in use.

TRIPA, in Ancient Geography, a country of the
Peloponnesus, in the Elide. Strabo mentions its maritime
town Samicam.

TRIELI, in Geography, a town of Sicily, in the valley of
Demona; 8 miles S. of Pati. N. lat. 38° 10'. E. long.

TRIPINA, in Botany, fo denominated from the
triply-pinnate leaves.—Loureiro. Cochinch. 391.—Clafs and
order, Didynamia Angiospermae.

This appears to be a very handfome and large tree, with
panicled orange-coloured flowers, a berry of one cell, with
four seeds, and smooth, ovate, pointed leaflets. It may be
referred to Jussieu's order of Plites, but whether to any
described genus, we want materials to determine. This
tree
TRIPLARIS, from Triplex, threefold, because of the prevalence of the number 3, in all the parts of fructification.


Gen. Ch. Male, Cal. Perianth of one leaf, turbinate, in fix ovate, acute, concave segments, externally hairy. Cor. none. Stam. Filaments nine to twelve, thread-shaped, inserted into the calyx below its divisions, which they exceed in length, behind a crown of very short hairs; anthers heart-shaped, erect.

Female, Cal. Perianth of one leaf, inferior, large, permanent; tube ovate, swelling; limb erect, in three deep, lanceolate, membranous, veiny, obtuse segments. Cor. Petals three, linear, obtuse, veiny, permanent, closely pressed to the germin. Stam. Filaments about twelve, very short, awl-shaped, erect, inserted in the male, but diminutive of anthers, and often altogether wanting. Pil. Germen superior, large, triangular; styles three, very short; stigmas awl-shaped, keeled, hairy. Peric. none, except the permanent calyx. Seed. Nut triangular, pointed, invested with the tube of the calyx.


Female, Calyx inferior, in three deep segments. Petals three. Styles three. Nut triangular, clothed with the calyx.


TRIPLE, Threefold. See Ratio and Sub-TRIPLE.

TRIPLE, in Music, is one of the species of measure, or time.

Triple time consists of many different species, of which there are in general four, each of which has its varieties. The common name of triple is taken hence, that the whole, or half measure, is divisible into three equal parts, and is beaten accordingly.

The first species is called the simple triple, in which the measure is equal to three semi-breves, three minims, three crotchets, three quavers, or three semi-quavers, which are marked thus, \( \frac{3}{4} \), or \( \frac{2}{4} + \frac{1}{4} \), but the last is not much used, except in church music.

In all these the measure is divided into three equal parts, or times, called the triple times, or the measure of three times; of which two are beat down, and the third up.

The second species is the mixt triple; its measure is equal to fix crotchets, or fix quavers, or fix semi-quavers, and according it is marked \( \frac{4}{4} \), or \( \frac{3}{4} + \frac{1}{4} \); but the last is seldom used.

Some authors add other two; viz. fix semi-breves and fix minimis, marked \( \frac{5}{4} \), or \( \frac{4}{4} + \frac{1}{4} \); but these are not in use.

The measure here is usually divided into two equal parts, or times, of which one is beat down and one up; but it may also be divided into fix times; of which the first two are beat down, and the third up; then the next two down, and the last up; i.e. each half of the measure is beat like the simple triple (on which account it may be called compound triple), and because it may be thus divided either into two or six times (i.e. two triples), it is called mixed; and, by some, the measure of six times.

The third species is the compound triple, consisting of nine crotchets, or quavers, or semi-quavers, and marked \( \frac{9}{4} \), \( \frac{3}{4} + \frac{3}{4} + \frac{3}{4} \); the first and last are little used; and also add \( \frac{1}{2} \), \( \frac{1}{2} \), which are never used.

This measure is divided into three equal parts, or times, of which two are beat down, and one up; or each third part may be divided into three times, and beat like the simple triple; on which account it is called the measure of nine times.

The fourth species is a compound of the second species, containing twelve crotchets or quavers, or semi-quavers, marked \( \frac{12}{4} \), \( \frac{4}{4} + \frac{4}{4} + \frac{4}{4} \); to which some add \( \frac{1}{2} \), and \( \frac{1}{2} \), which are never used; nor are the first and last much used, especially the latter.

The measure here may be divided into two times, and beat one down, and one up; or each half may be divided and beat as the second species, either by two or three; in which case it will make in all twelve times, and hence is called the measure of twelve times.

The French and Italian authors make a great many more species and diversions of triple time, unknown, or at least unregarded by our English musicians, and therefore not fo necessary to be dwelt upon here.

While the modes or moods were in use, triple time was the most difficult part of a musician's study; and, indeed, feems not to have been well understood by the masters themselves, as no two writers of elementary tracts on the subject seem to agree. But at present, by the use of bars and points, with the Italian technical terms for the degrees of quick and flow, triple time is fo simplified, that young students find it easier, and feel it sooner than common time. (See Plate Time-Table, and the article Notation.) When every gentleman's child learned to dance a minuet, young musicians found it easier to beat and to keep triple time, though it seems to limp, than common, which is the most simple, natural, and equable of all measures and motions. See Mixuer.

TRIPLE Progresion, in Harmonics, supposed to have been the invention, or rather to have been first applied to musical ratios by Pythagoras. To speak practically of this division of the monochord, or general system of music, it was the guide not only of Pythagoras, but Eudox, and all the Greek and Roman writers on harmonics, except Arisloccenus. It precluded all idea of temperament, by a series of perfect 5ths; nor was a temperament thought of by any of the ancients, except Didymus and Ptolemy; but they seem never to have been implicitly followed.

Nothing but mere melody being in question, and the major 3d being so harsh as to be ranked among discord, temperament was not much wanted till counterpoint had made some progress; and then it was as much opposed by the adherents to the practice of the ancients, as the Copernican system was by the adherents to the Ptolemaic. These prejudices, however, had been nearly annihilated, and the temperament of keyed and wind instruments became so habitual, that the triple progression had had no champion for a long time, till the abbé Rouffier, a Pythagorean enraged,
TRI

tragedy, arose, and treated all musicians as ignorant and absurd, who had not opposed temperament, and regarded all music as dissonance which had been composed for tempered scales. But we have heard nothing of the learned abbe since the Revolution; and there seems to be no more true believers left in Pythagoras's doctrine of the triple progression, in Europe at least, than in that of the transmigration of souls.

TRIPLE QUARTAN FEVER. See FEVER.

TRIPLE ENGRAVING. See ENGRAVING.

TRIPlicate Ratio, is the ratio which cubes bear to each other.

This ratio is to be distinguished from triple ratio, and may be thus conceived. In the geometrical proportions 2, 4, 8, 16, 32, as the ratio of the first term (2) is to the third (8) duplicate of that of the first to the second, or of the second to the third: so the ratio of the first to the fourth is said to be triplicate of the ratio of the first to the second, or of that of the second to the third, or that of the third to the fourth, as being compounded of three equal ratios.

TRIPLICatio, Triplication, in Civil Law, is the fame with far-rejoinder in common law.

TRIPlicity, or Trigon, among Astrologers, is a division of the signs, according to the number of the elements; each division consisting of three signs.

Triplicity is frequently confounded with trine aspect; though, strictly speaking, the two are very different things: triplicity is only used with regard to the signs, and trine, on the contrary, with regard to the planets.

The signs of triplicity are those which are of the same nature, and not those which are in trine aspect. Thus Leo, Sagittario, and Aries, are signs of triplicity, because those signs are, by those writers, all supposed fiery.

TRIPLOLOGY, in Geography, a common of England, remarkable for being the spot where the army formed the council of agitators, and chose Oliver Cromwell for their commander, in 1648; 8 miles S. of Cambridge.

TRIPLOIDES, a surgeon's instrument, with a threefold bafis, used in the refinishing of great depreffions of the skull. Blanc.

TRIPOD, Tripods, in Antiquity, a famed sculpted seat or foot, supported by three feet, on which the priests and sibyls were placed to render oracles.

It was on the tripods that the gods inspired the Pythians with that divine fury and enthusiasm with which they were seized at the delivering of their predictions.

M. Spanheim observes, that, on Roman medals, the tripod express some priesthood, or sacerdotal dignity. A tripod, with a raven and a dolphin, is also the symbol of the duumvir, deputed for keeping of the tripolyne oracles, and for consulting them on occasion.

Atheneus admits only two sorts of tripods, that are reduced to great and small tripods. But Baner distinguishes three kinds. Under the first he includes those used by the Pythians, when she delivered the oracles of Apollo in the temple of Delphos. The second kind comprehends whatever stood upon three feet, such as vases, tables, &c. of which there was a great number. Under the third class are included the votive tripods, which princes or private persons dedicated in the temples of Apollo. Herodotus (lib. ix.) speaks of a golden tripod, which the Greeks, upon their victory over the Periads, sent to Delphos. Molt of the tripods found in the cabinets of the curious, are of brass or of bronze.

TRIPOD of EAF. See TRITON.

TRIPODIUM. In the laws of Henry I. occurs this pallage—"Inquibus vero causis triplicem ladam haberet, ferat judicium tripodium." i.e. 60 solid. The meaning of this, according to some, is, that, as for a small offence, the composition was twenty shillings: so for a great offence, which was to be purged triplici lada, the composition was three times twenty shillings, and this was called tripodium.

TRIPOLDA, in Geography, a town of Naples, in Principato Ultra; 16 miles S. of Benevento.

TRIPOLI, a country of Africa, which, though tributary to the grand signior, is called a kingdom or regency; bounded on the N. by the Mediterranean, on the E. by Barca, or, considering Barca as a province of Tripoli, by Egypt; on the S. by the Atlas mountain; and on the W. by Tunis and Biledolgerid; about 60 miles from N. to W. The breadth, from N. to S., is various, from 120 to 250.

It has formerly been divided into seven provinces, or with Barca, eight; but it is generally distinguished into Maritime and inland: the inhabitants of the former generally live upon commerce and piracy; the latter for the most part on plunder and robbery. Each division hath some cities and towns, besides a number of villages, which lie scattered chiefly through the latter; most of them very poor and thinly inhabited: the country being almost everywhere sandy and barren: as for cities and towns, there are few, and for commerce, the greater part being either wholly depopulated and gone to ruins, or only inhabited by a few fishermen, lime-burners, potash-makers, and here and there a few labourers: the chief part reduced to the lowest degree of misery and wretchedness, through the cruel exactions of the government, or the frequent depredations of the Arabs.

The government, religion, laws, and customs of this kingdom are in a great measure the same with those of Algiers and Tunis. Only with respect to the first of these articles, it will not be amiss to observe, that the bey's of Tripoli are not mere titular vassals to the Porte, but really under subjection and tribute. This joined to the other exigencies of the regency, the avarice of the Turkish Bashaws, and the difficulty of Constantinople, and the general decay of commerce, obliges them to load the subjects with heavy duties, and extortions, as hath reduced the greatest part of the kingdom to the lowest degree of indigence and misery. The revenues arise chiefly from their corsairs, which are nevertheless but few, seldom exceeding seven or eight, and of these only one can properly be styled a ship, the rest are small galleys, poorly manned and equipped. The next is the duty on imports and exports; the tax on the Jews, who are here very numerous; on the natives, who, though ever so poor, must yet pay part of the produce of their ground, or manufactures; and lastly on the country Moors and Arabs, among whom the bey sends his flying camp of janizaries to levy it; for the last, as well as the Moors, are kept so poor by these heavy taxes, that nothing but force, and sometimes exemplary severity, can extort it from them. The bey, by means of his protection from the Porte, makes shift to keep up a kind of despotism, as he is besides generalissimo of all the forces. As for their commerce, it chiefly consists in slaves, either such as are taken by their corsairs, or such as they traffic for with their neighbours: the greatest part of both they send into Turkey, where they can dispose of them to the best advantage. The next branch is that of slaves, which they buy from the Barbarians, and sell to the Europeans, to make glass and soap; the rest of their traffic is not worth mentioning. One circumstance in the conduct of this regency deserves notice: they are more scrupulous observers of their treaties with other nations than any of their neighbours: which punctuality, whether it proceeds from real probity, or a consciousness of their own
own weakness, is nevertheless of no small advantage to navigation and commerce. This rate, as well as the rest of Barbary, after being freed from the Roman yoke, paffed successively under the Vandals, Saracens, and the kings of Morocco, Fez, and Tunis; till, weary of their effravity and oppression, they revolted to have a monarch of their own, whom they chose from among themselves; and the new monarch governed them at first with great equity and moderation; but he no sooner saw himself out of danger, than he began to play the tyrant in his turn to such a degree, that the citizens confpired against him, and he was murdered by his own brother-in-law. They chose in his room another, named Abubacer, who had been formerly an officer under him, but had since retired, and turned marabout or hermit; but he had not reigned many months, before Ferdinand, king of Castile and Aragon, sent thither Peter, count of Navarre, with a powerful fleet and army, which laid siege to the capital. Abubacer, finding himself unequal to fo powerful an enemy, surrendered on honourable terms, and was sent with his wife, two sons, and an uncle, to the emperor Charles V. then at Palermo, who soon after restored him to his former dignity, on condition that he should become his vassal and tributary. Abubacer rebuilt and re-peopled the city, which he held in the emperor's name, till the knights of Rhodes were driven out of that island, and forced to retire into Syracuse, when Charles was pleased to bellow the island of Malta upon them, together with the city and castle of Tripoli. They fought accordingly, and took possession of both, made one of their order governor, and put a garrison into it of their own troops. They were fearfully settled in this new acquisition, before Barbarossa made himself master of it, but it was soon after retaken by the emperor, and restored to them, who continued in possession of it till the reign of Solyman, who, under pretence that it had been retaken during the truce, sent thither a naval armament, consisting of about 110 royal galleys, and 30 other vessels, under the command of Sinan bashaw, who had under him the famed Salta Rais, surnamed Devil-driver, and the no less famous Dragut; and notwithstanding every means of defence, it was obliged to surrender, and delivered up to the Turks, after it had continued in the possession of the Christians a little above forty years, from the time of its being taken by the count of Navarre. Sinan committed the government of it to the aga Morat, upon condition that he should hold it under the grand signor, and resign it whenever he should appoint another governor. It was not long, however, before the famed corsair Dragut got possession of this place. He fortified both city and castle with strong walls, and two forts near the sea-fide, well supplied with artillery and ammunition; by which means it became one of the strongest cities in Africa, and the common retreat of most of the corsairs that roved under Turkish colours, from whence they infested the coasts of Italy, Sicily, Naples and Spain, and a fruitless attempt was made by the Christians to retake it. After the death of Dragut, the Porte continued sending either a fanjaghe or bahaw to Tripoli, the castle being garrisoned with Turks, and the city inhabited by Moors, and the kingdom still paying tribute to the grand signor. The piratical trade went on with success; the renegades met with the usual encouragement from the Turks, and were promoted to the command of the corsairs, and even of their own fleets, and sometimes to the bahawship; these recommending themselves to the regency, not only by their desperate behaviour, but much more by their peculiar barbarity to the Christian prisoners, which often provoked reprisals, that were carried on both sides to such extents as can hardly be particularized without horror. In this condition the kingdom continued till the Turkish government, becoming more and more intolerable, by the avarice and tyranny of those bahaws, a certain marabout named Sid Hajah, about the close of the sixteenth century, found means to raise a general revolt both in the city and country. Unfortunately for him, he did not take care to secure a foreign alliance, before he broke out into open rebellion; so that Haicen bahaw, the Turkish admiral, came suddenly upon him, at the head of sixty galleys, and a number of other ships and vessels, which he had procured from Tunis and Algiers, and defeated him so often, that he was at length abandoned by his troops, and assassinated by his own partizans. Haicen sent the marabout's head to Constantinople, and had hardly settled the government on the old footing, when a new governor, sent thither from the Porte, found a much more effectual way to free them from this tyranny. This man was a renegado Greek, of the ancient family of the Juttiani, known by the name of Mahmet Beygh, who, by his intrigues and bribes, had obtained a banner or government from the grand signor. He failed directly to Tripoli, and having got possession of the castle, refused to acknowledge or receive any bahaw from Constantinople. He took the reins of government wholly upon himself, not indeed as independent, but as vassal and tributary to the Porte, to whom he obliged himself to pay a tribute and homage, as an acknowledgment of his submission and dependence.

TRIPOLI, a city and sea-port of Africa, and capital of the country so called, situated on the coast of the Mediterranean. It was formerly divided into two parts, the Old and New; the former, which was the native country of the emperor Severus, is supposed to have been built by the Romans, was twice conquered by the Vandals, and at last destroyed by the Mahometans, under their caliph Omar II., which time it hath never recovered its importance, and is now almost gone to ruin; the latter, which stands at a small distance from it, though of no great extent, is populous, and in a flourishing condition. It stands on a foundation of rock, by the sea-side, surrounded with high walls and stout ramparts, flanked with pyramidal towers, but not kept in good repair. The sea washes the town on three sides; and on the fourth a sandy plain, called the Mecca, joins it to the rest of the country. On the E. it is divided from Egypt by the dreary deserts of Barea, where none reside but occasionally the wandering Arab. It hath but two gates, one towards the inland on the S., and the other to the sea on the N., where it expands itself in form of a crescent, near a spacious and commodious harbour. On entering the harbour, the town manifests the dilapidations of time, large heaps of rubbish appearing in various parts of it. The castle, or royal palace, where the bahaw resides, is at the E. end of the town within the walls, with a dockyard adjoining, where the bay (the bahaw's eldest son) builds his cruisers. The castle is very ancient, and is inclosed by a strong wall, that appears impenetrable; but within, it is totally destitute of symmetry.

New Tripoli is supposed to have been built by the natives, who gave it the name of Tarabilla, or Trebbile, whence the Latins call it Tripolis. Some authors pretend that it was once a place of vall trade, on account of its neighbourly to Numidia and Tunis, resorted to by vessels from Malta, Venice, Sicily, Marselles, and other parts; there being hardly such another commodious sea-port along this whole coast, except Alexandría; by which means it became so opulent, that it was filled with rich merchants, abounded with fine mosques, hospitals, and other public buildings, and
TRIPOLI.

and excelled Tunis in beauty and wealth. It retains now but few traces of its ancient splendour. The baths form clusters of cupolas, very large, to the number of nine or ten, crowded together in different parts of the town. The mosques have generally a small plantation of Indian figs and dates close to them, which give to the town a novel and pleasing aspect. The houses are low and mean, the streets narrow, dirty, and irregular; there are in it nevertheless some monuments still standing, which evince its former magnificence; particularly a triumphal arch, one half of which now lies buried in the sand, and some remains of Roman pavement.

We need not wonder at this extraordinary decay, if we consider the two great inconveniences which this city labours under: first, the want of sweet water, here being neither rivers, springs, nor wells, nor any other means of supplying it with that useful element but cisterns and reservoirs of rain-water; secondly, the great finacity of corn, and the other products of the ground, occasioned by the dry sandy soil that surrounds it on the land side for several miles. It produces, however, palm-trees in great plenty, that yield the most delightful dates, which constitute a considerable part of their food; besides these, they have the lothos or lotus, a tree whose fruit is reckoned still finer than the dates, and makes a most excellent wine. That plant serves them for meat and drink, for which reason they have been called by the ancients Lotophagi. But upon the whole, were it not for the continual supply of provisions brought in by their corsairs, and other trading vessels, Tripoli could never subsist by the products of its own territories; and hence we may infer the cause of its present decay.

Adjacent to the walls of the city is a famous burying-ground, in which are found coffins, urns, medals, and other curious relics of antiquity. The Franciscan friars have here a very handsome church, convent, and hospital, the last of which is the more necessary, as the city is so often and so feverishly visited by the plague. Other orders of monks were here settled, who have since obliged to abandon it, probably on account of its decay. The country around is adorned with a multiplicity of handsome villas, cultivated chiefly by Chillian slaves, and much like those about Algiers and Tunis. The people here carry on a considerable trade in linen cloths, great quantities of which are wrought by the inhabitants; but their chief dependence is on their own corsairs, and those of other nations, which resort to their harbour. Its shops are little better than booths, though they contain pearls, gold, gems, and precious drugs. Here are two covered bazaars, one very large, composed of four aisles meeting in a crofs, furnished on each side with shops, which contain every kind of merchandise: the other is much smaller, without shops, and destined to the sale of black men and women. (See the preceding article.) A late traveller says, the date-trees, which spread themselves like a foret behind the town, and the hills beyond them, which bound the prospect on the north, are interesting objects; but the town itself is built in too low a situation to compose a part of the general scene: for it is scarcely visible at the distance of a mile. Its scanty limits, though scarcely four miles in circumference, are too great for its present population; and its ancient castle, though once the pride and chief reliance of the reigning family, is now a mouldering ruin: 300 miles S.E. of Tunis. N. lat. 32° 54'. E. long. 13° 18'.

Tripoli, or Tarabulus, a town of Syria, and capital of a pachalik, and residence of the pasha, situated near the mouth of a small river, called Kadifca, at the foot of Mount Lebanon, which overlooks and surrounds it with its branches to the E. the S. and even a little to the N.W. The Greek name Tripoli, denoting three cities, is derived from its having been built by three colonies, from Tyre, Sidon, and Aridus, each of which formed settlements in or near each other that they were soon united into one. It is separated from the sea by a small triangular plain, half a league in breadth, at the point of which is the village where the vessels land their goods. The Franks call this village La Marine, the general name given by them to these places in the Levant. There is no harbour, but a simple road, which extends from the shore to shoals, called the Rabbit and Pigeon Islands. The bottom is rocky, and mariners are not fond of remaining here, as the cables are soon worn out, and the vessels exposed to the N.W. winds, which are frequent and violent on all this coast. In the time of the crusades, this road was defended by towers, seven of which are still subsisting from the mouth of the river to the village. They are strong built, but now serve only as a place of resort for birds of prey. All the environs of Tripoli are laid out in orchards, where the nopal grows spontaneously, and the white mulberry is cultivated for the silk-worm; and the pomegranate, the orange, and the lemon-tree, for their fruit, which is of the greatest beauty. The grounds belonging to it extend as far as Mount Lebanon, and abound in vineyards. Each hill produces a different wine; but the golden wine is most admired. But these places, though delightful to the eye, are unhealthy. Every year, from July to September, epidemic fevers, like those of Alexandria and Cyprus, rage here: these are owing to the artificial inundations with which the mulberry-trees are watered, in order that they may throw out their second leaves. Besides, as the city is open only to the west, the air does not circulate, and the spirits are in a constant state of oppression, which makes health at best but a kind of convalescence. At La Marine the air is more fabulous, its circulation being less impeded. The commerce of Tripoli consists almost wholly in indifferent coarse silks, which are made use of for rags, and is in the hands of the French alone. But they are losing their quality, which is owing to the decay of the mulberry-trees. They have a conful here, and three commercial houses. They export silks, and sponges filled up in the road; these they exchange for cloths, cochineal, sugar, and West India coffee; but this factory, both with respect to imports and exports, is inferior to Latakia; which see.

The pachalik of Tripoli comprehends the country which stretches along the Mediterranean from Latakia to the Narh-el-Kelb, and is bounded on the W. by that torrent, and the chain of mountains which overlook the Orontes. The principal part of this government is hilly, the sea-coast alone between Tripoli and Latakia being a level country. The numerous rivulets which water it contribute greatly to its fertility; but notwithstanding this advantage, this plain is much less cultivated than the mountains, without even excepting Lebanon, with its numerous rocks and pine-trees. Its chief productions are corn, barley, and cotton. In the territory of Latakia, tobacco and olives are principally cultivated; but in Lebanon and the Kefrawan, white mulberry-trees and vineyards. This pachalik contains several tribes and religions. From Lebanon to above Latakia, the mountains are peopled by the Anfarians, a particular sect of religious, which first rose in the latter end of the ninth century; Lebanon and the Kefrawan are inhabited entirely by the Maronites; and the sea-coast and cities, by chilismic Greeks, and Latins, Turks, and descendants of the Arabs. The pacha of Tripoli enjoys all the privileges of his place. The military and finances are in his hands; he holds the government in quality of a farm from the Porte, on a lease of one year only, at the annual rent of 750 purses (39,000l.)
In 1101, this town was taken by the Christians, and held by Bertrand, son of Raymond, count of Toulouse, as a county, in which situation it remained till the year 1288, when it was taken by Melec Messer, sultan of Egypt, who ordered it to be razed to its foundation; 75 miles N.N.W. of Damascus. N. lat. 34° 28′. E. long. 35° 36′. Volney’s Travels in Egypt, &c. vol. ii.

**Tripoli**, in Mineralogy, a mineral originally brought from Tripoli for the polishing of flounces and metals, whence it derives its name. It has a dull argillaceous appearance, but is not compact; it has a fine but hard grain, and does not soften by water, or mix with it. The colours are grey, inclining to red or yellow. From analysis, it proves to be principally composed of filex. Tripoli appears to be of two formations; the one by fire, which has hardened flates and sand-flones, and converted them into this substance; the other by water, decomposing beds containing filex, clay, and iron.

The tripoli from Derbyshire, called rotten-flone, may be referred to the latter formation; it occurs in the upper part of the great slate stratum which covers the mountain lime-flone of that district: it is dug near the surface, and is sold for 60s. per ton. Farray’s Derbyshire, vol. i. p. 231.

The tripoli of Poligné, near Rennes, in Brittany, is fuscile. It is of a red colour of different shades. Trunks of trees are found changed into tripoli in the middle of the beds, which are covered by beds of sand-flone in an inclined position.

The tripoli of Venice is the most esteemed; it comes from the island of Corfu. It is chalcolite, and has a yellowish-red colour. Sauvage has remarked in this tripoli, and in the preceding, a multitude of small cylindrical pores.

Tripoli is found at Menal, near Riom, in the department of Puy-de-Dôme. It occurs in beds which appear to have been formerly schists changed by the action of volcanic fire. This substance is found in the quarries of chalcedony of Volterra in Tuscany, and is said to be so situated as to appear evidently the result of the decomposition of the chalcedony. It occurs in coal strata at Polichapello, in Saxony. The tripoli from Bilin, in Bohemia, occurs in thin beds, which pass insensibly into pitch-flone. Acids produce no effervescence with it, nor is it melted by the r@ll violent heat; though it is somewhat hardened.

In fact, we sometimes find tripoli in volcanic mountains, or in strata which contain beds of coal in a state of combustion; and sometimes in beds formed evidently by deposition from water. It should appear that certain strata, composed principally of filex in a slate of extremely minute division, and combined with iron and clay, are decomposed by the agency of water, and the latter materials being in a great part removed, the filex is left porous and friable, and coloured by iron: it then forms tripoli; and beds of this mineral may have been so formed, and afterwards covered by strata of lava, where they occur in volcanic mountains. Where filex is intermixed with a portion of alumine and iron, as in schills, the alumine by exposure to a great heat may be hardened and contract, and leave the flone in a porous or friable flate. The specific gravity of tripoli is stated by Bucholz at 2.022, and its constituent parts:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Specific Gravity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silex</td>
<td>2.91</td>
</tr>
<tr>
<td>Alumine</td>
<td>1.50</td>
</tr>
<tr>
<td>Oxyd of iron</td>
<td>2.93</td>
</tr>
<tr>
<td>Sulphuric acid</td>
<td>3.43</td>
</tr>
<tr>
<td>Water</td>
<td>1.00</td>
</tr>
</tbody>
</table>

The sulphuric acid and water are considered as accidental.

For the method of imitating gems by means of tripoli, see Gems.

**Tripolis**, in Ancient Geography, a country of the Peloponnesus, in Arcadia, so called on account of its three towns, according to Pausanias.—Alfo, a town of Phocis, situated about half a league from the sea, and 18 miles from Orthoia. Diodorus and Strabo derive its name from three towns of which it originally consisted, about a stadium from one another.

Alexander the Great subdued this city, which, after his death, passed to Tolemy Soter, whose successors retained possession of it till the reign of Antiochus the Great, king of Syria, who made himself master of this town and the whole of Phocias, towards the year 219 B.C. After its subjugation by Pompey, it passed under the dominion of the Romans, but was allowed the privilege of being a free city, and of being governed by its own laws. Under the empire of Vespasian, Tripoli assumed the epithet of Flavian. The territory of Tripoli was watered by many rivers and streams, which descended from Libanus. About two leagues E. of Tripoli was a tomb formed in a rock, which the Syrian Christians held to be the sepulchre of Canaan, the father of the Phenicians.

**Tripolis**, a town or country of the Peloponnesus, in Arcadia, which afforded an ample supply both of men and cattle, according to Pausanias.—Alfo, a town of Thelfaly, in which were the towns of Pythium, Azorum, and Dolicha, according to Livy.—Alfo, a town of Aisa, on the Meander, and capital of Caria.—Alfo, a town of Asia, on the banks of the Euxine sea, W. of Trebicolon.

**TRIPOLITANA REGIO**, or Tripoli, a country of Africa, bounded N. by the Mediterranean sea, E. by the river Çinyes or Cinypus; situated in the middle of Libya Interior, and W. of the river Triton. Procopius says, that Sergius was appointed governor of this province by Justinian, at whose instigation the inhabitants embraced the Christian religion. They were called the “allies of the Romans,” because they faithfully maintained their peace with them. Some have confounded Pentapolis with Tripolis. See Tripoli, in Geography.

**Tripolizza**, in Geography, a town of European Turkey, in the Morea, the capital of a pacha, having about 12,000 inhabitants. In 1770, this town was besieged by the Russians and revolted Greeks, but a numerous detachment of Albanian cavalry coming up, the Greeks fled and left the Russians to the contents alone, of whom hardly one escaped. The Albanians afterwards, under a pretence that the inhabitants had held a correspondence with the enemy, put three thousand of them to the sword in less than two hours, and then plundered and set fire to the town; 18 miles W. of Napoli di Románta.

**Tripontio**, or **Triponzio**, a town of the Penedem, in the duchy of Spoletto, on the Ner; 12 miles N.W. of Norcia.

**Tripontium**, in Ancient Geography, a place of Italy, in Latium, on the Appian way; which appears by the military column to be at the 30th mile: it was repaired by the emperor Trajan. The Goths conquered a tower in this place.

**Tripontium**, a town of Great Britain, in the fifth Iter of Antonine, supposed to be Rugby. Drs. Gale and Stukeley place it at Downbridge, and the last of these authors derives its name from trs, a town, and pant, a little valley, in which Downbridge is situated. Camden and Baxter fix Tripontium at Toweled, and Camden derives its name from the British words *Taur-ponti*, signifying three.
three bridges. But Mr. Horsey supposes it to have been situated where the town of Rugby now stands.

TRIPOOR, in Geography, a town of Hindoosfan, in Myf ore; 25 miles N.E. of Coimbeore.

TRIPPING, in Heraldry, denotes the quick motion of all sorts of deer, and of some other creatures, represented with one foot up, as it were, on a trot.

In speaking of lions, they say pasiant, instead of tripping.

TRIPPING, in Sea Language, denotes the movement by which an anchor is loosened from the bottom by its cable or buoy-ropes. See ATRIP.


Gen. Ch. circumspect by Schreber. Male flowers in pairs, unilaterial, alternate, mostly in the upper part of the spike. Cal. Glume two-floreted; the outer floret male; inner neuter; each of two valves: outer valve lanceolate, flat-topped, obtuse, awnless, carinate, thiniger at the edges; embracing the inner valve, which is oblong, triangular, keeled, acute, about the same length. Cor. in each floret of two nearly equal valves, membranous, very thin, awnless, smaller than the calyx; the outer valve oblong, boat-like, blunt; inner lanceolate, cloven at the end. Nept. of two minute, triangular, fleshy, convex, abrupt valves, pointed at each end, thinnest at the upper margin, notched in the middle. Stam. in the outer floret, Filaments three, capillary, longer than the calyx; anthers parallelepipedal; in the inner, Filaments three, very slender, somewhat combined; anthers none.

Female flowers in the lower part of the same spike, alternately sunk in the common flake, at each side. Cal. Involucre oblong, carinate, very thick, tupid below, polished; obliquely bordered at each side externally; blunt and somewhat emarginate at the end; embracing the inner glumes with its thinner margin. Glume of two valves; the outermost oblong, tumid, taper-pointed, thickish, double; inner fimal, but rather blunt. Car. of two valves, smaller and thinner than the calyx; the outer valve largest, tumid, bluntly three-toothed; inner rather smaller, flat at the back, emarginate. Abortive glume of one valve, oblong, folded in at each margin, furnished with two teeth, and situated at the fore-side of the fertile floret, to which it is much inferior in size. Nept. minute, of two linear, membranous, very thin scales, acutely notched at the summit. Stam. Filaments three, minute, at the base of the genitum, capillary, dilated below; anthers linear, minute, imperfect. Pet. Germen superior, oblong; fylle one, compressed, longer than the calyx; fylle two, very long, villous, twisted. Peric. none. Seed solitary, ovate, a little compressed, pointed with the permanent style.

Obf. At the base of the involucrum, at each side, is an opening, lined internally, on one side, with bristly hairs.

Eff. Ch. Male, Calyx a glume of two flowers, the innermost neuter. Corolla of two membranous valves.

Female, Calyx a single-flowered glume, enclosed in a single-leaved involucre, pierced at each side. Corolla of two valves. Stigmas two. Seed one.


Hort. Cliff. 438. Gramen dactyloides maximum americanum; Pluk. Phyt. t. 190. f. 2. G. dactyloides indicum esculentum, fipica articulata; Ambrofin. Phyt. 546, 547, rude, but expressive, Setamo perenne indico, pianta frumentacea; Zonan. 18. 181. t. 69, not 68.—Spikes aggregate, about three together, male in the upper part, female at the base.—On the banks of rivers, and along the sea-shore, in Virginia, Carolina, and the country of the Illinois, flowering in August. Pursh. Root perennial, thick and woody, with many strong zigzag fibres. Stems numerous, erect, reedy, four or five feet high, round, smooth, as thick as a goose-quill, knotty; leafy below. Leaves long, linear, taper-pointed, an inch broad, smooth. Spike a fpan long, smooth, usually three together, often more or fewer; the male flowers very numerous.

T. monilifrons, Willd. n. 2. Hort. Berolin. t. 1, found in fall meadows and ditches, from New York to Carolina, seems, as Pursh remarks, to be but a single-flaked variety of the former; probably such as is represented by Miller above cited.


TRIPETEREA, a diminutive from τρίς, three, and ώπος, a wing, used by Michaux to express the character of the three little narrow wings, projecting from the angles of the calyx, or rather corolla; not, as De Theis says, of the capsule.—Michaux Bore. Amer. v. 1. 19. Vahl Enum. v. 2. 42. Pursh 28.—Cliffs and order, Triandra Monogynia. Nat. Ord. akin to Burmannia, and perhaps Hypoxis; genera whose place in Jussieu's system is not well settled.

Gen. Ch. Cal. none, unlees the corolla be taken for such. Cor. of one petal, permanent, superior; tube swelling at the base, contracted in the middle, angular, with three flight wings, at the summit; limb shorter than the tube, in six deep segments, the three intermediate ones minute. Stam. Filaments three, very short, inserted into the tube below the three smaller segments of the limb; anthers within the tube, of two widely separated lobes. Fil. Germen inferior; fylle the length of the flaments, triangular; fylle in three short, thickish, blunt segments. Peric. Capsule membranous, triangular, of three cells, crowned with the withered corolla. Seeds numerous, minute, oblong, cylindrical, striated.

Eff. Ch. Calyx none. Corolla superior, of one petal; its tube angular, swelling at the base; limb in five segments, the three intermediate ones minute. Capsule of three cells, with many seeds.

TRI

TRIPTYCHION. See Triphthongue.


Gen. Ch. Common Calyx imbricat, nearly cylindrical, of several lanceolate, keeled, spinous-pointed, nearly equal, scales, containing four or five flowers, in a simple series. Cor. compound, uniform, radiant; florets all uniform, perfect, fertile, monopetalous, tubular, two-lipped; the lower lip spreading, ovate, three-toothed; upper much smaller, erect, oblong, entire. Stam. Filaments five, capillary; anthers united into a tube, shorter than the corolla, dwelling in the middle. Pfyl. German solitary under each floret, obovate; style thread-shaped, longer than the filaments; stigmas two, oblong, spreading. Peric. none, except the permanent calyx. Stigma foliary, oblong, angular; down of five equal, linear, channelled scales, the length of the calyx, each terminating in a denes, oblong, pointed, spreading plume, about half as long as the scale. Recept. small, clothed with soft shaggy hairs.


1. T. luciariatum. Blue and White Triptilium. Willd. n. 3. (T. spinoiun; Cavan. MSS.) - Native of Peru and Chili. We received a specimen from the late abbé Cava- nilles in 1804. Few plants constitute a more distinct genus, or make a more elegant appearance, even after being in many years dried. The root is said to be annual. Herbage hard and rigid, besprenckled with fine, long, loose, rather copious, hairs. Stem round, slender, branched, corimboose, brown, very leafy. Leaves scattered, nearly or quite felse, spreading, about an inch long, pinnated, with three or five spinous-pointed, convexit forms; pales, and moss hairy, beneath; accompanied by short, axillary, leafy shoots, whose leaves are linear and undivides. Flowers numeros, in a denes, composed, level-topped, corimboose, leafy panicle. Calyx about one-third of an inch long; its scales slightly hairy, with membranous edges. Lower lip of each floret of a bright permanent blue; upper whitish. The feathery tips of the feed-down, nearly the length of the florets, are snow-white, and, contrasted with their fine blue, make a singularly elegant appearance. We have not heard of this plant in any European garden.

TRIPTIS, in Geography, a town of Saxony, in the circle of Neudalt; 4 miles E. of Neudalt. N. lat. 50° 29'. E. long. 11° 50'.

TRIPOLEMUS, in Mythology. See Ceres.

TRIPTOTES, compounded of tri, three, and choros, chef, in Grammar, defective nouns, which have only three cases; such is foris, fortis, forte; or dicem, dicam, dicea.

TRIPUDIUM, in Antiquity, a species of divination, in which omens were drawn from the rebounding of corn thrown to chickens.

TRIPUNETAIRE, in Geography, a town of Hindooftan; 35 miles E.N.E. of Cochín.

TRIPURA, a city often mentioned in the mythological relations of the Hindoos, as having been destroyed, together with its wicked sovereign Tareka, by their god Siva, who is hence called Tripuranteka, or the destroyer of Tripura. See Sura and Tareka.

TRIPURANITEKA, in Mythology, a name of the Hindoo god Siva, so called from a mythological relation of his having destroyed a city and tyrant named Tripura.

TRIPYRAMIDES, derived from tri, three, and pyram, a pyramid, in Natural History, the name of a genus of spars.

The bodies of this genus are spars composed of single pyramids, each of three sides, standing on no column, but affixed by their bases to some solid body.

Of this genus there are only two known species: 1. A short and thick one, found on the sides of the facks of stone in Northamptonshire, and elsewhere; but this is not common, and is usually small. 2. A long one with a narrow base: this is not found in England, but is common in the German mines. Hill.

TRIQUETRA Ossia, in Anatomy, the small irregular bones occasionally found between the regular bones of the cranium. See Cranium.

TRIQUETRUM Foliurn, among Botanists. See Leaf.


Eff. Ch. Calyx many-flowered, of two equal, awlnees valves. Spikelet two-ranked; two, or more, of the lowest florets perfect, the rest male, or neuter. Outer valve of the corolla with three terminal straight awns; inner awlnees. Nectary of two valves. Stigmas villous.

A genus of grasses found within the tropics, akin to the Triodia and Pappodorum of Mr. Brown, (see those articles); and therefore to his Ebroea, and the Chloris of Schwaert, which are said to be very little different from each other. The flowers are panicked. Two New Holland species, gathered by the learned author in the tropical part of that country, are all that occur in his Prodrus; nor does this genus find a place in Mr. Kunt's South American work. Probably however there may be East Indian species, unknown to us.

1. T. pupen. - Panicle loose. Outer valve of the corolla carious, minutely downy. Awns equal; the middle one simple. Leaves involute, spreading, straight.

2. T. mollis. - Panicle close. Outer valve of the corolla bearded with spreading hairs. Middle awn furnished at each side with a bristle-like appendage.

TRIEME, or Three-men, in Antiquity, a galley with three ranks of oars on a side. See Enneris.

TRISACRAMENTARIANS, or Triessacramen- tiarians, an appellation given to a sect in religion, who admit of three sacraments, and no more.

There have been several Triessacramentarians who allowed of baptism, the eucharist, and abfission for sacraments.

The English are often misinterpreted by foreigners as Tri- sacramentarians, from an opinion that they allow ordination to be a sacrament.

TRISACTIS, in Natural History, the name of a genus of tar-fat, composed of a body and three rays, the more usual number being five.

TRISAGA, in Geography, a town of Italy, in the Cadern; 14 miles N.N.E. of Cadore.
TRISAGION, or TRISAGIUM, τρισάγιον, compounded of τρίς, three, and αὐγίς, favūs, holy, in Church History, a hymn, in which the word holy is repeated three times.

The proper Trisagion is those words, Holy, Holy, Holy, Lord God of Sabaoth, which we read in Isaiah, vi. 3, and in the Apocalypse. From these words the church formed another trisagion, which is rehearsed in Latin and Greek, in the respective churches, to this effect, Holy God, Holy Mighty, Holy Immortal! have mercy upon us. Petrus Ful- lenius to this trisagion added, o θεός, εὐλογησε τοὺς, They who ought to be merciful — have mercy, &c. thus attributing the pailion, not to the Son alone, but to all the three persons of the Trinity; and he pronounced anathema to all such as would not say the same. See THEOFASCHITAE.

The use of the second trisagion (exclusive of the addition of Fullenus) began in the church of Constantinople, whence it passed into the other churches of the East, and afterwards into those of the West: and still subsists in its pristine purity, both in Latin, Greek, Ethiopic, and Mozarabic offices.

TRISAKTI, or TRISAKTI-DENI, in Hindoo Mythology, is a name of the goddess Parvati, consort of Siva. It means of triple energy; both god and goddess having various triform characters and potencies, and many names indicative of three-fold properties. Parvati is found to have many attributes and appellations corresponding with those of the Grecian Juno or Diana: among them several derived from their three-fold character. Triva, for instance; and by the way, the meeting or junction of roads was mysteriously sacred to both. See JUNCTION.

Tritonea, Tergemania, &c. are appellations of the Triple Hecate. See Potter's Archæol. Græc. ch. xix.

TRISANTHUS, in Botany, from τρίς, three, and αὖμος, a flower, because there are three flowers in one common calyx.—Lour. Cochin. 175.—Clois and order, Pentandria Dignum. Nat. Ord. Umbelliferae.


1. T. cochinichinifis. Rau mā of the Cochinichines. The only described species, frequent among hedges in Cochinchina, where, though an excelent herb, it is not cultivated. The author thought he had also met with this plant in China, as well as other parts of the East Indies; and he cites the Des cuspidatus of Rumphius, book 9. chap. 69. t. 169. f. 1, which is no other than Hydrocotyle diffusa of Linnaeus. They may be one and the same, as Lourêre was most inclined to believe. He describes his Trisantus with a long, trailing, slender, thread-shaped flower, taking root at nearly regular intervals. Leaves from the same points as the roots, roundish, concave, rugose, smooth, crenate, divided half way down, on long, erect stalks. German purple, which Lourêre takes for a perianth investing the seed, and becoming a pericarp. The flower-stalks are radical, crowded, rather long.

The whole plant is said to be vulnerary, cleansing, diuretic, and nephritic. Lourêre knew a man who, having deprived himself, at a stroke, of parts which most people with to prefer, healed the wound readily by the applica-

TRISCAEDACTILIS, in Natural History, a name given by Linkius, and some other authors, to a kind of branched star-fish, or astrophyte, whose rays are thirteen in number, where they first leave the body, and each divides into many more.

TRIS-DIAPIASON, TRIPLE-DIAPIASON, in Music, what is otherwise called a triple eighth.

TRISE, at Sea, the seamen's word for haling up of any thing with a dead-rope, or one that doth not run in a block, but is pulled by hand or by main strength: thus if any cask, cheif, or other goods, hath only a rope fastened to it, and so without a tackle be pulled up into a ship by hand, they say it is trisèd up.

TRISECTION, or TRISSECTION, the dividing of a thing into three.

The term is chiefly used in Geometry, for the division of an angle into three equal parts.

The trisection of an angle geometrically, is one of those great problems whose whole solution has been so much sought by mathematicians for two thousand years; being, in this respect, on a footing with the quadrature of the circle, and the duplicature of the cube angle.

Several late authors have written of the trisection of the angle, and pretend to have found out the demonstration of it; but they have all committed fallacies.

TRISTÈCE, the three-haired file, a term used by the writers in Natural History, to express a certain genus of the fetaeacae, or bristle-tailed files, which are distinguished from the rest, by having three hairs or bristles growing from the tail; there are several kinds of these files, found frequently among our hedges.

TRISTÈUM, in Botany, apparently so called because the corolla was supposed to have three awns, is a genus of grases, adopted by Parsh, Pl. Amer. Sept. 26 and 76, for which he cites Persoon's Enchorrhina, v. 1. 97, and gives the following essential character.

Calyx two or three-flowered, pointed, keeled. Corolla with two terminal awns, and a solitary dorsal one, which is straight, not twisted. Flutes smooth.

The only species mentioned by Mr. Parsh, is called T. pratense, and is said to be Avena flavescens of former authors.

If it be the European plant, so well known under that name, we can not indubitably aver that it does not answer to the above character, the corolla having two taper points, like many other grasses; but nothing like awns except the large solitary dorsal one, which is as certainly twilled as that of all other Avenae.

TRISÉUS, in Ichtyology, a name given by Salian, Benedictus Jobius, and others, to that species of the gadi which we call the eelpout, and authors in general the mytilis fluviatilis. See GADUS LATA.

TRISIRAS, in Hindoo Mythology, is the name of a dog appertaining to their god Yama, the regent of hell. This reminds us at once of the Cerberus of the Grecian Plato, the more particularly as the Hindoo dog is represented to be three-headed, which indeed is the literal translation of Triiras.

TRISMEGISTUS, derived from τρίς, three, and μεγαλ. great, an epithet, or surname, given to one of the two Hermes, or Mercuries, kings of Thebes, in Egypt, who was contemporary with Moses.

Mercury, or Hermes Trismegistus, is the latter of the
two Hermēs; the former having reigned about the time of the Deluge. They are both of them represented as authors of many of the arts and institutions of the Egyptians. See HERMES.

TRISMIS, or TROSMIS, in Ancient Geography, a town of Lower Macedonia, near the Danube. Ptol. This place is marked in Ant. Itin. on the route from Viminacium to Nicomedia, between Biren and Arrubium.

TRIMOS, τρίμος, or τρίγος, a convolution of the muscles of the temples, causing the teeth to gnash.

TRISOULYPIONICA, τρισούλυπιονικα, compounded of τρίς, three, ολυμπικα, Olympic games, and νικα, victory, among the Ancients, a person who had thrice borne away the prize at the Olympic games.

The trisoulypionica, or trisoulypiotics, had great privileges and honours allowed them. Statues were erected to them, of the kind called iconia, which were modelled to the size and form of their persons.

They were also exempted from all taxes and incumbrances, and could never be marked with infamy.

TRISPAST, TRISPASTON, compounded of τρίς, three, and πάστον, I draw, in Mechanic, a machine with three pulleys, or an amlangement of three pulleys, for raising great weights.

The trispaston is a species of polyptalon.

TRISPERMUM, in Pharmacy, the name of a catalpa, or poulique, confisting of three ingredients; these are cummin and opium seed, and bay-berrys.

TRISSA, in Ichthyology, a name used by some authors for the fish more commonly known by the name of alauna, and called in English shad, or the mother of herrings.

TRISSACRAMENTARIANS. See TRISSACRAMENTARIANS.

TRISSANTON Bay, in Geography. See Southampton.

TRISSARRI, a town of France, in the department of the Lower Pyrénées; 9 miles S.W. of St. Palais.

TRISSILD, a town of Norway, in the diocese of Aggerhus; 65 miles N. of Kongfanger.

TRISSINO, GIANGIORGIO, in Biography, an Italian poet, was descended from a noble lineage, and born in 1478 at Vicenza. In his youthful studies he was industrious and ardent. Besides the Latin and Greek languages, the latter of which he acquired under Demetrius Chalcondylas, he became a proficient in mathematics, physics, architecture, and other fine arts. He was employed in polls of truth and honour by the popes Leo X. and Clement VII., and he also received many tokens of distinction from the Venetian republic and his native city. He was twice married; and with both his wives he lived happily at Vicenza. But a law-suit, in which he engaged with the son of his first wife, obliged him to retire to Murano, near Venice, and having lost his caufe and a great part of his property, he went to Rome, where he died in 1550. Ambitious of being a poet, he cultivated an imitation of the ancients; and his tragedy of "Sofonisba," formed after the laws and manners of their drama, and the first in which verse without rhyme was employed, has been considered as the first Italian work of that class. This tragedy, framed by the author in 1515, was not printed till the year 1524. His next production was a comedy, intitled "Similimi," which was well received. But his great work, in which he was engaged for twenty years, was his epic poem, intitled "Italia Libera da Goti," the subject of which was the deliverance of Italy from the Goths in the reign of the emperor Justinian.

His model in the composition of this work was Homer, whom he fervently imitated, infomuch that, according to Voltaire, "he took every thing from him but his genius." The success of this poem by no means corresponded to his expectations. Of his other works, and his whimsical but ineffectual project of introducing certain Greek letters into the Italian alphabet, we need take no notice. Gen. Biog.

TRISTAN d'Acunha, in Geography, the largest of three islands in the South Atlantic ocean, about 1500 miles from any land either to the west or north, very lofty, and about 15 miles in circumference. A part of the island, for Ermans Gower observes, (quoting the author of the Authentic Account of the Embassy to China,) towards the north rises perpendicularly from the sea to a height apparent of 1000 feet, or more. A level then commences, forming what among seamen is termed table land, and extending towards the centre of the island; from whence a conical mountain rises, not unlike in appearance to the Peak of Teneriffe, as seen from the bay of Santa Cruz. Boats were sent to sound and examine the shore for a convenient place to land and water. In consequence of their report the Lion flood in, and came to anchor in the evening on the north side, in 30 fathoms water, one mile from the shore; the bottom black sand with flame; a small rock of the weft point bearing south-west by south, jut open with the western extremity of the island; a cascade or fall of water emptying itself upon the beach by eait. All the shore from the southern point to the eastern extremity appears to be clear of danger, and deep, except the weft point, where there are breakers about two cables' length, or near 500 yards, from the shore. The ship, when anchored, was overshadowed by the dark mafs of that portion of the island, whose fides seem to ride like a moos-grown wall immediately from the ocean. On the right the elevation was less rapid, and between the rising part and the fan was a flat of some extent, covered with fedge-grasfs, interperfed with small shrubs, which being perfecty green, looked from the ship like a pleafant meadow, watered by a stream that fell aftewards from its banks upon the beach. The officers who went ashore reported, that the caiks might be filled with fresh water by means of a long hose, without moving them from the boats. The landings-place thereabouts was alfo defcribed as being safe and superior to any other that had been examined. From the plain the land rofe gradually towards the central mountain, in ridges covered with trees of a moderate fize and height. The coast abounded with sea-lions and fells, penguins and albatrosses; one of the latter was brought on board, his wings measured ten feet from tip to tip; but others are said to have been found much larger. The coast was covered with a broad sea- weed feveral fathoms long, and defervedly by naturalifts termed gigantic fucus. Some good fish was caught with the hook and line. The accident of a sudden gulf, by which the anchor was in a few hours driven from its hold, and the ship forced out to sea, prevented the island from being explored as was intended. It is probable, that if the Lion had anchored in twenty infeed of thirty fathoms water, the anchor would have held firmly. Some advantage was obtained, however, from coming to this place. The juft position of thofe islands in refept to their longitude was ascertained, by the means of feveral time-pieces, to be about two degrees more eafterward than generally laid down in charts. Thofe islands are certainly worthy of a more particular enquiry; for they are not fifty leagues from the general track of veffels bound to China, and to the coast of Coromandel by the outer passage. In war-time, an excel lent rendezvous might be fettled there for ships that wanted no other supply than that of water. When circumstances require particular difpatch, it is prafticable to come from England to Triflan d'Acunha without flogging in
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in the way, and afterwards to the end of the voyage to India or China. These islands are separated by a space of about 1500 miles from any land to the westward or northward of them. They are situated in that part of the southern hemisphere, in the neighbourhood of which a continent, to balance the quantity of land in the northern hemisphere, was once expected to be found; but where it has since been discovered that there is none. The spot where the Lion anchored was determined by good meridional observations, and by accurate time-pieces, to be in S. lat. 37°.

W. long. 15° 30'.

TRISTANIA, in Botany, from τρίσταν, three, and ἵππος, a horse; in allusion, as we presume, to the tertiary disposition of the flowers and their stalks; the three-foled inflorescence of this, doublef very different, genus, being strikingly different from all to which it is nearly allied in the parts of fructification.—Brown in Ait. Hort. Kew. v. 4. 417.


Gen. Ch. Cal. Perianth superior, of one leaf, turbinate, in five deep, triangular, nearly equal segments. Cor. Petals five, roundish, inserted into the rim of the calyx between its segments. Stam. Filaments numerous, in five sets, opposite to the petals, and about the same length, mostly paltry; anthers roundish, incumbent. Pfl. German inferior, turbinate, somewhat angular; lyle thread-shaped, about the length of the flaments; stigma obtuse. Peric. Capsule roundish, more or less completely coated, of three cells and three valves, the partitions from the centre of each valve. Seeds numerous, minute, angular.

Eff. Ch. Calyx superior, in five deep segments. Petals five. Stamens numerous, in five palmary parcels, opposite to the petals, and scarcely longer. Style one. Capsule of three cells.

This genus is selected from Melaleuca, (see that article,) whose character however may stand as it does, distinguished by the great length of its flaments. Our 4th, 5th, and 18th species belong to Tristania, with one more already published, and probably several others, known as yet to Mr. Brown alone, defined for the sequel of his Pro- drorus. All the true Melaleuca have perfectly selffie, generally crowded, flowers. Having already described the above three species, we shall here merely enumerate them, with the appropriate specific characters of Mr. Brown, as far as he has given any.

1. T. nigrofus. Oleander-leaved Tristania. Ait. n. 1. (Melaleuca nigrofus; Sims in Curt. Mag. t. 1058. M. ilicifolfa; Audry. Repof. t. 485.)—Leaves opposite, lanceolate, Stalks from three to five in each set.—Observed by Mr. Brown, in New South Wales, from whence its seeds were lent to England, about the year 1804, according to Mr. Aiton, who marks it as a greenhouse shrub, flowering from July to September. The flaments are much fewer than in any other species which has come to our knowledge, and their connexion at the base is but slight. The flavour of the plant is said to be bitterish and astringent, scarcely aromatic, in which it differs from the Melaleuca.


—Native of New Holland, near Endeavour river. Sir J. Banks. Not as yet introduced into our gardens.

3. T. laurina. Laurel-leaved Tristania. Ait. n. 2. (Mel- aleuca laurina; Sm. Tr. of Linn. Soc. v. 3. 6275. Wili. Sp. Pl. v. 3. 1429.)—Leaves alternate, obovato-lanceolate, zappering at the base. Calyx, flalks, and branches downy. Capsule half superior.—Gathered by admiral Phillip in New South Wales, and introduced, from feed, to Kew in 1798, by sir Joseph Banks. It is a greenhouse shrub, but has not yet flowered. After.

4. T. conferta. Pittosporum-leaved Tristania. Brown MSS. Ait. n. 3.—"Leaves alternate, elliptical, or some- what lanceolate, acute; the terminal ones crowd-d. Seg- ments of the calyx acute, leafy."—Found by Mr. Brown in New South Wales, and introduced at Kew in 1805. A greenhouse shrub, flowering from July to September.—We have seen no specimen of this last species, nor have we any account of the colour of its flowers, which are probably white, like those of the two immediately preceding.

TRISTE, in Geography, an island near the coast of Ame- rica, on the south side of the bay of Campeachy, situated on the west of Port Royal island, from which it is separated only by a narrow channel, about 18 miles in circumference. N. lat. 18° 20'.

TRISTE, a name given by the Spaniards to the gulf of Paria; which see. This gulf, according to Depons, is twenty-five leagues from E. to W., and fifteen from N. to S., and has anchorage in that whole extent, but its depth varies from eight to thirty fathoms. Upon the coast of Paria its foundings are much less. This gulf is, in fact, a real port, which for excellence and extent vies with the handomell in the world. It has a muddy bottom, except near the coast of Terra Firma, where are shoals and banks of sand. Its waters are as salt as those of the sea, though some have erroneously represented them as fresh. This gulf is difficult of entrance; and the wind must be from the S.E. to enter it with any prospect of safety. The tide is formidable, and has a violence inconceivable by those who are not well acquainted with the great ebbings and flowings of the sea.

TRISTEMMA, in Botany, from τρίσταν, three, and ψυχι, a crown, "because the fruit is surmounted by a triple permanent crown," a genus mentioned by De Theis, but without reference to any author, nor have we met with any indication of it elsewhere.

TRISTEN, in Geography, a town of Germany, in the county of Feldkirch; 11 miles S.S.W. of Feldkirch.

TRISTO, a word used by Paracelsus, to express what he calls the material fire, lodged in the matter of all the four elements, and exerting upon occasion its influence, under the form of the proper effects of each element.

TRISTONBOROUGH, in Geography, a town of Strafford county, in the State of New Hampshire, containing 709 inhabitants.

TRISTR, TRUSTRA, or TRJ aesthetics, in our old Law- Books, an immunity, by which a man is excused from attending on the lord of the forest, when he is disposed to chance within the forest; so that he cannot be compelled to hold a dog, follow the chase, nor stand at the place appointed, which otherwise he might be, under pain of amercement.

"Sint quiets, &c. de chevagio, homedenni, bucktel, et trifis, et de omnibus misericordias, &c." Privileg. de Sempingham.

TRISULA, in Hindoo Mythology, the name of one of the commonest attributes of the Hindoo deity Siva. In pictures of him, it is represented as a tridentated implement, similar to that seen in the hands of the Neptune of the West.

The seat of Hindoos who are Saivas, that is, exclusive worshippers of Siva as the deity, maintain that the Trisula is sym- bolical of his trial of powers; meaning that he comprims the whole of the powers of creation, preservation, and destruction. Others explain
explain the Trifula as allusive to Siva's supremacy over the three worlds; or earth, heaven, and hell; a mysterious triad, awefully indicated by the compound trivertical phrase Bhur-bhuvanayastr, of which see under the article O'm.

The word Trifula means, in the Sanscrit tongue, three-pointed. In the west of India, it is sometimes called triphala; and hence, connected with other coincidences, Mr. Wilford (Af. Ref. vol. iii.) considers the Jupiter Triphylius of the Panchaen islands to be no other than Siva holding a triphala; he being also represented with three eyes, to denote a triple energy; as Vifhnu and Prithvi are severally typified by an equilateral triangle, and conjointly, when their powers are suppos'd to be combined, by two such triangles intersecting each other. The mysterious properties of the triangle, or cone, with its apex upward or downward, and of two intersecting triangles, are noticed in our articles Linda, O'm, Farvati, Pavaka, Siva, Vishnu, and others thence referred to. The intersected equilateral triangles, mentioned by Mr. Wilford as typical of Vifhnu and Prithvi, have an allusion in natural philosophy to the influence of humidity on the earth; Vifhnu representing the aqueous principle of nature, and Prithvi the material, or the earth. (See Prithu and Vishnu.) Of the resemblance of Jupiter Triphylius, or Triopthalmos, with the three-eyed Siva, see under his name of Trilokan, which means with three eyes. Trireta has also a similar meaning.

Trisuli, a name of the Hindoo deity Siva. He is so called from bearing the symbol Trifula, or trident. See Trisula.

Trisyllable, Trissyllable, in Grammar, a word consisting of three syllables.

Tritea, in Ancient Geography, a town of Achaia, in the southern part, on the river Melas; said to be founded by Menalippus, son of Trittia, a priest of Minerva, in consequence of her amours with the god Mars. The principal temple of this city was that of the greater gods, who were annually honoured by feasts similar to those of Bacchus. The statue of Minerva, which was reckoned beautiful, was transported from hence to Rome. This town was one of those which Augustus put into a state of dependence upon Patras.

Tritéophys, a word used by the medical writers of the ancients, to express a kind of fever, much of the nature of the tertian, and taking its rise from it.

Tríteny, in Geography, a town of Hindostan, in the Carnatic; 16 miles S. of Bombaurezzapollam.

Tritchingode, a town of Hindostan, in Miyore; 6 miles S. of Sankerdurgam.

Tritchinopoly, a town of Hindostan, in the Carnatic. It is surrounded with two walls, flanked with towers, and encompassed with a ditch. It was taken by the British under major-general Lawrence and captain (afterwards lord) Clive, in 1751, and since that time it has been made the capital of Madura; 67 miles W. of Tranquebar. N. lat. 10° 48'. E. long. 78° 45'.

Trite, in Music, the third musical chord in the system of the ancients. There are three triads under this denomination in the ancient diagram, viz. the trite hyperboleon, trite diezengemonon, and trite synemonon. This chord of the ancient tetrachord was so named from its being the third from the note; and hence we might call it the anti-penultimate. It was otherwise, in some tetrachords, called parypate. See Diagram and Interval.

Trite Diezengemonon, in the Greek Music, was the anti-penultimate note of the diezengemonon tetrachord, and answers to Guido's c, fa, fa, ut.

Trite Hyperboleon, was the anti-penultimate note of the hyperboleon tetrachord, and answers to Guido's f, fa, ut.

Trite Synemonon, was the anti-penultimate note of the synemonon tetrachord, and answers to Guido's b, fa, ut.


Tritéa, or Triflua, in Ancient Geography, a town of Asia, in the Troad.

Tritheism, the opinion of the Triteists, or the heresy of believing three Gods.

Tritheism consists in admitting not only of three persons in the Godhead; but of three substances, three essences or hypostases, and indeed three Gods.

Several people, out of fear of giving into Triteism, have become Sabellians; and several others, to avoid Sabellianism, have commenced Triteists; so delicate and subtle is the distinction.

In the famous controversy between Dr. South and Dr. Sherlock, the first is judged to have run into Sabellianism, by a too rigorous assertion of the unity of the Godhead; and the latter into Triteism, by a too absolute maintaining of the Trinity.

John the Grammian, a named Philoponus, lover of labour, is held the author of the sect of the Triteists, under the emperor Phocas; at least it appears that he was a zealous advocate of it.

The chief of this sect, according to Mohheim, Eccl. Hist. vol. i. was John Aecusnaghe, a Syrian philosopher, and a Monophysite. He imagined in the Deity three natures or substances, absolutely equal in all respects, and joined together by no common essence.

Tritheism, in Church History, a name given to such heretics, as admit not only of three persons, but of three distinct substances and natures, in the Holy Trinity. See Trinity and Tritheism.

Trithemius, John, Abbot, in Biography, was born in the year 1442, at the village of Trittenheim, near Treves, whence he took his name. Having finished his course of education in the universities of Treves and Heidelberg, he was chosen abbot of the Benedictine monastery of Spanheim in 1483, which he superintended for twenty-two years, and when he withdrew from it in consequence of a faction of the monks, he was placed by the bishop of Wurzburg at the head of a monastery in that city, where he died in 1518, at the age of seventy-six. "Trithemius," says one of his biographers, "was a person of vaft erudition, a philosopher, mathematician, chemist, poet, historian, and divine, and conversant in the Hebrew, Greek, and Latin languages." His works, written in Latin, are numerous, but those in biography and history are held in the highest estimation. His writings on piety and morality chiefly relate to the monastic and facerdotal life, miracles of saints, and such topics. His philosophy bore the mystic character of the age in which he lived. His "Steganographie, or the Art of writing in Cyphers," containing some singular characters ignorantly taken for talismans, subjected him very unjustly to the charge of magic. Upon the whole, "he appears to have been a person whose great learning was considerately tinctured with credulity, and whose industry was superior to his judgment." Dupin. Gen. Biog.

Trithing. See Trinling.

Triticum, in Botany, an old Latin name, very factitious, but derived, by Varro himself, from tritum, ground or rubbed, because of the manner in which its grain is prepared for the food of mankind. Wheat, or Wheat-grafs. Linn. Gen.
TRITICUM.


Gen. Ch. Col. Common receptacle zigzag, toothed, elongated into a spike. Glume tranverse, containing about one or more flowers, and confiding of two ovate, bluntish, concave valves. Cor. of two nearly equal valves, the fize of the calyx; the outermost tumid, obtuse with a point, orawn; the inner flat. Sted of two acute scales, gibbous at the base. Stam. Filaments three, capillary; anthers pendulous, oblong, clonied at each end. Pfijt. Cernua inferior, turbinate; styles two, capillary, reflexed; sigmas feathery. Peric. none, the corolla embracing the feed till it is full-grown and ripe, then letting it go. Seed solitary, ovate-oblong, blunt at each end, convex at the outer side, marked with a longitudinal furrow on the inner.

Eff. Ch. Calyx of two valves, solitary, tranverse, many-flowered, on a zigzag, toothed receptacle.

We have already adverted to the difficulty of distinguishing this genus from Secale; see that article. They both agree in the tranverse, or lateral, position of their bivalve calyx, by which position the side of each spikelet is parallel to the common receptacle, not, as in Lolium, contrary. The greater number of fpecies in Triticum, which are only two in Secale, is the only technical diftinction. The outer valve of the corolla of the present genus is often terminated by a long awn; but this appendage varies, even in the same species.

Section 1. Root annual.

1. T. aegyptium. Summer Wheat. Linn. Sp. Pl. 126. Wildl. n. 1. Ait. n. 1. Bauh. Pin. 21. ("T. aegyptium; Blackw. Herb. t. 40. f. 4. 5.");—"T. loculicis quadrifloris, bufi subfuscinis, glumis exteriouribus floribus arisatis; Hall. in Com. Nov. Goett. v. 5. t. 1. f. 1.")—Calyx four-flowered, tumid, smooth, imbricated, awned.—Supposed to be a native of Siberia. It is known in the spring, and produces a speedy but uncertain crop. We have never seen an authentic specimen, nor are we at all certain that what has generally been taken for this species is anything more than a variety of the following.

2. T. hybrida. Winter, or Lammas, Wheat. Common Cultivated Wheat. Linn. Sp. Pl. 126. Wildl. n. 2. Ait. n. 2. Ehrl. Pl. Off. n. 151. Gurtz. f. 1. (T. vulgare; Hoff. Gram. Aufr. v. 3. 13. t. 26. T. hybrida, arisitas carenas; Tourn. Infl. 512. t. 292. T. epica mutica; Ger. Em. 65. Silico epica mutica; Lob. 19. 2.)—Calyx four-flowered, tumid, even, imbricated, abrupt, with a short comprefted point.—Native country unknown. Cultivated in various parts of the world; being fown in autumn, it flands the winter, and ripens feed in the following fimmer, so that it may be reckoned a biennial. The root consists of downy fibres. Stem one or more, erect, straight, from three to five feet high, round, jointed, smooth, leafy. Leaves linear, pointed, flat, many-rilled, rough, entire, rather glaucous. Stipula jagged, bearded. Spike solitary, two or three inches long, dense, two-ranked, smooth, joints of the common flach or line. Glumes smooth. Calyx in the upper part of the spike with a more elongated point. Corolla of the upper spikelets frequently more or less awned.

Under this most important and familiar species are comprehended a great number of varieties, the knowledge and history of which are more peculiarly the province of the agriculturalist, and will be treated of under the article Wheat. By the botanist they have not been sufficiently investigated, either as varieties or species. Some of them appear entitled to the latter denomination; particularly the White Wheat, T. album, Gurtz. f. 2, which is orbiculate calyx, and the long awns of its corolla, seem to indicate a specific difference. This last character indeed occurs in many of them; see Tourn. t. 293. Some of the reputed species of Linnæus are less decisively marked. The determination of these points, with the respective qualities of each species or variety, might very advantageously occupy the attention of some accurate rustic botanist, continually on the spot, by whose labours the question might be set for ever at rest, and probably a moft important service rendered to scientific agriculture. Not to embroil the subject, we shall not, with insufficient materials, enter upon it.

3. T. compositum. Many-spike Wheat. Linn. Suppl. 115. Willd. n. 3. (T. epica multiplex; Bauh. Pin. 21. Ger. Em. 66. Moriz. leef. 8. t. 1. f. 7.)—Spice compound; spikelets crowded. Corolla awned—Native of Egypt; cultivated at Naples. The glumes are smooth. Awns three or four inches long. This is probably a variety of the last, rather than, as Linnæus says, of T. aegyptium.


5. T. polonicum. Polish Wheat. Linn. Sp. Pl. 127. Willd. n. 5. Ait. n. 4. Hoff Gram. Aufr. v. 3. 21. t. 31. Pluck. Phyt. 231. f. 6. Moriz. leef. 8. t. 1. f. 8.—Calyx three or four-flowered, pointed, naked, lanceolate like the corolla, which is comprefted, with a long awn. The native country of this likewife is unknown. It was cultivated here in the latter part of the seventeenth century, for curiosities at leaft, and is still seen in botanic gardens, though not much regarded by the farmer, being easily laid by rain. That this is a different species there can be no doubt. The strength of the whole plant, its large ears, and long, narrow, scarcely tumid glumes, readily distinguish it at first sight. Linnæus defines this Triticum as having a two-flowered calyx, the character of Secale; but Haller afferts the presence of one, if not two, imperfect fpecies.

6. T. spelta. Spelt Wheat. Linn. Sp. Pl. 127. Willd. n. 6. Ait. n. 5. Ehrl. Pl. Off. 431. Hoff Gram. Aufr. v. 3. 21. t. 30. (Zen dicoccus five major; Bauh. Theatr. 472. t. 413. Z. epica mutica dicoccus, vel major; Moriz. leef. 8. t. 6. f. 1.)—Calyx imperfectly four-flowered, elliptical, obliquely pointed, shorter than the long-awned corolla.—The origin of this species is likewise unknown, nor is its specific character satisfactory. The glumes are very glaucous. It is chiefly cultivated in the fouth of Europe, and is given to horfes in Spain, when barren is scarce. The bread it makes is of a dry quality, but no kind of flour is better for pastry.

7. T. monocolococcos. Single-grained Wheat, or St. Peter's Corn. Linn. Sp. Pl. 127. Wildl. n. 7. Ait. n. 6. Ehrl. Pl. Select. n. 33. Hoff Gram. Aufr. v. 3. 22. t. 32. (Zen epica barbata, &c.; Moriz. leef. 8. t. 6. f. 2. Briza monocolo; Ger. Em. 73.)—Calyx angular, strongly toothed, about three-flowered. First fcore awned; intermediate one imperfect.—Native country unknown. This species is cultivated in the most mountainous parts of Switzerland.
Switzerland. The next quadrangular form of the ripe ear, as if carved out of ivory, is remarkable. The spike is hard and firm, excellent for thatching. Flower rather better than that of the preceding, making good, though not white, bread, and chiefly esteemed for gruel.

8. T. prostratum. Trailing Wheat-grafs. Linn. Sp. Suppl. 114. Willd. n. 9. Ait. n. 7. (T. pumilum; Linn. Sp. Suppl. 115. Willd. n. 10. Secale prostratum; Pallas It. v. 1. 485. Jacq. Hort. Vind. v. 3. 25 t. 44.)—Spike ovate, compressed, two-ranked. Glumes of the calyx and corolla strongly keeled, longer than their awns.—Found by Pallas in the most barren sandy and stony desert near the Caspian sea. M. Thouin, in 1780, sent seeds to Kew garden. A hardy annual, flowering in June. The spikes sometimes fall off entire, and vegetate in the sand, producing a tuft of decumbent slender plants, from three to six inches long, with narrow, finely downy, leaves. Spike solitary, terminal, from half to three-quarters of an inch long, smooth, elegantly two-ranked, with ten or twelve closely imbricated, furrowed, incurved spikelets. Awns of the calyx awl-shaped, nearly as long as those of the corolla, being about a quarter the length of the glumes. T. pumilum of Linnaeus is the very rare species, described twice over.

9. T. tenellum. Dwarf Wheat-grafs. Linn. Sp. Pl. 127. Willd. n. 15. Ait. n. 11. (T. n. 1430; Hall. Hift. v. 2. 212, most certainly according to Mr. Davall. Gramen loliaceum minus, piccis simplici; Bauh. Fl. Pin. n. 35. Prodr. 19.)—Spike simple, linear. Spikelets alternate, elliptic-lanceolate, awnless. Calyx furrowed. Corolla even, emarginate. Leaves bristle-shaped.—Native of Switzerland, and the south of France. Root annual, of a few woolly fibres. Stem one or more, erect, straight, from four to eighteen inches high, scarcely branched, leafy, with several dark-brown joints. Leaves short, slender, erect. Spike terminal, solitary, erect, very slender. Spikelets more or less diffus, erect, close-preferred, rather turgid, smooth. Florets from four to eight or ten, polished, somewhat cylindrical, pale and blunt at the tip, with light indications of lateral ribs. We can meet with no certain figure of this very distinct species, under which, as Schrader remarks in Fl. Germ. v. 1. 346, Linnaeus has confounded several different things. Gramen paeulum unicaule, paniculæ loliacæ; Bocc. Muf. 69. t. 57, quoted by him for the following, is most like T. tenellum, and may perhaps be intended for it.

10. T. unilaterale. Unilateral Wheat-grafs. Linn. Mant. 35, excluding certainly the first two synonyms, and probably the third; see the preceding species. Wild. n. 18. (G. loliaceum minus, piccis tenuissimis; Morif. sect. 8. t. 2. f. 3.)—Spike simple, linear. Spikelets alternate, close, turned to one side. Calyx unequal, taper-pointed. Corolla short-awned, smooth. Native of Italy, Syria, and the south of France. Root annual, of many capillary fibres, partly downy. Stem numerous, a span high, finely branched, smooth, leafy. Leaves narrow, channelled, ribbed; their sheaths long, furrowed, sometimes clothed with very short, soft, deflexed hairs. Spike solitary, long, slender, a little curved, of numerous, rather close spikelets, half the size of the foregoing, and less turgid. Florets three or four, awl-shaped, with bristly awns of various lengths, but scarcely above half so long as the glumes.


This appears to us a mere variety of the last, with downy glumes, and longer awns to the florets. Loefling’s specimens are of humbler growth than those of the preceding that have in general fallen under our inspection, but there is no specific difference between them.

12. T. maritimum. Sea Wheat-grafs. Linn. Sp. Pl. 128. Willd. n. 14. Vahl Symb. v. 2. 26. (Gramen loliaceum paniculæ ramosa, maritimum; Bauh. Theatr. 130. Scheuchz. Agroft. 274. t. 6. f. 5.)—Spikelets panicled. Spikelets many-flowered, compressed. Florets linear-flakeolate, ribbed, pointed, awnless. Stem branched.—Native of the sea-coasts of the south of France, Greece, and Egypt. Root annual, of many woolly fibres. Stems branched from the base, leafy, a foot high, more or less bent at the joints, and partly decumbent; often purplish, as well as the sheaths of the leaves, and branches of the panicule. Leaves longish and tapering, narrow, flattened, smooth. Sheaths broader than the leaves, but much shorter. Stipula membranous, torn, decurrent. Panicle about three inches long, forked, with many spreading, spiked, triangular, smooth branches. Spikelets alternate, slightly flaked, half an inch long, smooth, of about eight crowded florets, each strongly keeled, and acutely pointed, smooth, with a strong marginal rib at each side. Calyx-calvus furrowed, nearly equal. Some synonyms referred to this, belong to the following. That of Boccione, t. 95, is at least doubtful.

13. T. loliaceum. Dwarf Sea Wheat-grafs. Fl. Brit. n. 4. Engl. Bot. t. 221. Willd. n. 17. Knapp t. 114. Gramen pumilum, loliaceum simile; Rall. Syn. 295. G. loliaceum exile durium; Sm. Rel. Rudb. 13. G. exile durifculum maritimum, foliolis circumsulatis, velutiniuncibus, brevibus; Pluk. Phyt. t. 32. f. 7. G. parvum marium, piccis loliacæ; Morif. sect. 8. t. 2. f. 6.)—Spike mostly simple, unilateral. Spikelets many-flowered, compressed. Florets elliptical, oblong, awnless, with marginal ribs. Stem branched.—Native of the sandy sea-beach, on the east and south coasts of England, as well as in Italy. We have it from a Piedmontese botanist, under the name of T. unilaterale. Root annual. Stems rigid, spreading, smooth, from three to five inches high. Leaves tapering; involute when dry. Spike erect, mostly simple, linear, rigid, of from nine to twelve alternate, slightly flaked, two-ranked spikelets, turned most to one side; in very luxuriant, or cultivated, specimens the lower part of the spike is branched. This plant is very nearly allied to Poa rigidus, nor is the position of their spikelets dissimilar. It serves however to connect our last species of Triticum with the following one.


Section 2. Root perennial.

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lis pungentibus, nofras; Pluk. Phyt. t. 33. f. 4. G. anguilli-sixium, spicis tritici, mattice finili; Bauh. Prodr. t. 17. Morif. feet. 8. t. 1. f. 5.—Calyx abrupt, five-flowered. Leaves involute, sharp-pointed. Root creeping.—Found abundantly on the loose sands of the sea-coast, throughout Europe, flowering in July. The long (ringly tough roots fixed by woolly fibres, co-operate with Carex arenaria, Elymus arenarius, &c. in fixing the sand, and forming a barrier against the encroachments of the ocean. The whole plant is very glaucous, hard and rigid, with spinous-pointed leaves, strongly furrowed on their upper side. The stems are two feet high, often tinged with violet in the lower part, and very smooth. Spikes solitary, simple, compressed, stiff, of several alternate, flat spikelets, quite smooth and awl-like. Calyx many-ribbed, July. Schrad. Germ. v. t. 392.


17. T. renfis. Creeping Wheat-grafs. Conch-grafs. Linn. Sp. Pl. 128. Willd. n. 13. Fl. Brit. n. 2. Engl. Bot. t. 909. Leers t. 12. f. 3. Knapp t. 111. Mart. Ruff. t. 124. Dan. t. 748. Schreb. Gram. part 2. t. 25. (Gramen canum vulgatius; Morif. feet. 8. t. 1. f. 8.)—Calyx awl-shaped, many-ribbed, five-flowered. Florets pointed. Leaves flat. Root creeping.—But too common throughout Europe, in all kinds of cultivated ground, flowering in summer and autumn. The long and deeply creeping roots are of all things most difficult to exterminate. Yet when collected in sufficient quantity, they afford wholesome nourishment for cattle, and in some countries have been made into bread in times of scarcity. The stems are two feet high, slender. Herbage green, except in a maritime variety, the y of Fl. Brit. T. juncum of Relhan, T. intermedium of Holft Gram. auct. v. 2. 23, which is glaucous, with pubescent leaves, and possibly deliquescent to rank as a separate species. The leaves of our common kind spread horizontally, often all to one side, by which this species becomes conspicuous among bushes or hedges in autumn. Spikes two or three inches long, much smaller in every part than those of T. juncum. Florets from five to eight, either linear, pointed, or furnished with awns, which vary in length, but are scarcely equal to the glumes.


19. T. crifitatum. Crefted Wheat-grafs. Schreb. Gram. tafe. 2. t. 23. f. 2. Sm. Compend. ed. 2. 27. Engl. Bot. t. 2267. (Bromus critalutus; Linn. Sp. Pl. 115. Willd. Sp. Pl. v. 1. 439. Festuca culmo spicato, spiculis multihoris; Gmel. Sib. v. t. 11. t. 23. Gramen triticum, spicis latiore comparatæ; Buxb. Cent. t. 32. t. 50. f. 3.)—Calyx elliptical, awned, keeled, obscurely ribbed. Florets awned. Spikelets closely imbricated, two-ranked, defiined, straight. Stems simple.—Common in Siberia and Tartary. The late Mr. George Don discovered it on steep banks and rocks, by the sea-side in Scotland, between Arbroath and Montrose, flowering very sparingly. The roots are perennial, with very long, strong, woolly fibres, defined to grow in sand. Stems twelve or eighteen inches high, ascending, slender, rigid, leafy; hairy at the top. Leaves linear, shortish, sometimes hairy; their theae long and stiff. Spike elliptic-oblong, very close, pale, most resembling T. proliferum, n. 8, but longer, and differing essentially in the lateral ribs of the calyx-glumes, which are obsolete, or smoothed away, not turgid and curved. That these two grusses most belong to one and the same genus, is evident to the most casual observer.


21. T. foliwm. Rough New-Holland Wheat-grafs. Brown n. t. (Festuca scabra; Labill. Nov. Holl. v. 1. 22. t. 26.)—Spikes elongated, lax. Calyx lanceolate, ribbed, pointed, many-flowered, half the length of the corolla. Florets rough, taper-pointed, shorter than their awns. Leaves flat, rough, with smooth sheaths.—Native of New South Wales, and the Cape of Van Diemen. Root apparently perennial, with thick downy fibres, not creeping. Stems slender, erect, eighteen inches high, smooth. Leaves narrow, hairy. Florets from five to ten, in thefele, alternate, rather distant, upright, oblong, spikelike, from an inch to an inch and half in length.

22. T. petinatum. Petiñate New-Holland Wheat-grafs. Brown n. 2. (Festuca petinata; Labill. Nov. Holl. v. 1. 21. t. 25.)—Spikelets two-ranked, horizontally disarrayed. Calyx awl-shaped, pointed, about six-flowered. Awns shorter than the florets. Leaves flat, ciliated.—Found by Labillardiere, in the island of Van Diemen. The root is fibrous, presumed to be perennial. Stems numerous, tufted, erect, simple, a foot or more in height; leafy below; downy upwards. Leaves narrow, spreading, hairy and fringed, acutely pointed. Spike solitary, erect, ovate-oblong, flat, two-ranked, two or three inches in length, of a dozen or more alternate, rather crowded,形成 spikelets, each near an inch long, which in the flowering season spread horizontally, but subsequently become reflexed. The calyx-glumes are slender, somewhat unequal, pointed, but not awned, rather shorter than the florets, which are rough, ribbed, and furnished with straight awns, whose length, however, is less than that of each corresponding glume. The inner valve of the corolla is elliptic-lanceolate, fringed with hairs.

TRITNU, or TRITVNU, in Hindoo Mythology, a name of Surya, the Hindoo regent of the sun. The word means three-bodied. See SURYA and TRIMURTI.

TRITOMA, in Botany, so named by Mr. Ker, late Gawler, from τρίτομα, three, and τιμορτος, to cut, whence comes the adjective τριτομάτος, cut, or fit for cutting; in allusion to the three sharp angles of the leaves. — Ker in Curt. Mag. Vol. XXXVI. Q 744.
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44. Dryandr. in Ait. Hort. Kew. v. 2. 290.—Clas
and order, Hexandra Monogynia. Nat. Ord. Coran

Gen. Ch. Cat. nonc. Cor. of one petal, inferior, cy
lindrical, even, with fixed shallow, regular, marginal teeth. Stam.
Filaments fixed, inserted into the receptacle, thread-
shaped, simple, straight, projecting beyond the corolla, three alternate ones
longer than the rest; anthers roundish, two-lobed. Pist. Germin superior, roundish; style of
the shape and length of the longer filaments; stigma acute, some
what downy. Peric. Capsule ovate, bluntly triangular, of
three rather rigid valves, and three cells. Seeds numerous,
smooth, crowded, in two rows, angular.

Eff. Ch. Corolla tubular, of one petal, with fixed mar
ginal teeth. Stamens prominent, straight, inserted into the
receptacle; three intermediate ones longest. Capsule ovate,
of three cells, with many angular smooth seeds.

The present genus is well distinguished from Aletris, as
well as from the Veltheimia of some botanists; being, as
its author observes, nearer in character to Aloe; from which,
however, it differs greatly in its less succulent habit, and
more absolutely monopetalous corolla; but especially in
the long, prominent, unequal, straight, not ascending,
filaments, and more firm, or harder, capsule. The insertion
of the filaments into the receptacle, not into any part of
the corolla, to say nothing of other characters, or of the
different habit, essentially distinguishes this from the two
other above-mentioned genera. (See all in their proper places.)
When habit functions such a division of genera, we mut,
especially in a very natural order of plants, like the present,
be content with technical characters which might otherwise
is distinguished from all the above by its brilly feed, im
bricated upwards, in a prismatic capsule.

v. 2. 182. Aloe Uvaria; Linn. Sp. Pl. 460. A. afr
icana, folio triangulari longifimo et angustifumo, floribus
luteis festis; Commel. Hort. v. 2. 29. t. 15.)—Leaves
rough with minute prickles on the edges and keel. Corolla
cylindrical-clubshaped.—Native of the Cape of Good
Hope. Cultivated in Chelsea garden at the beginning of
the 18th century. The plant is almost perfectly hardy in
our climate, flowering in the open ground in August or
September, only requiring a moderate protection from se
vere frost. The root is tuberous, perennial, tufted, bearing
plenty of long, tapering, deep-green, three-edged leaves.
Stems three feet high, round, stout, nearly naked, each
bearing a dense clustcr of very numerous, but short-lived,
dropping flowers, richly coloured with orange and scarlet.
Corolla above an inch long. Stamens yellow.

Mag. t. 744. Ait. n. 2. Redout. Lilac. t. 161. (Ale
tris fermentofa; Andr. Repof. t. 54.)—Leaves smooth at
the edges and keel. Corolla cylindrical-clubshaped.—Native
of the Cape of Good Hope, from whence it is said to have
been introduced in 1780, by Mr. Williams, nursery-man,
of Turnham Green. As hardy as the last, but flowering
either in winter or the early spring, so that a frame, or
greenhouse, is requisite to have it in perfection. It is
smaller than the preceding, with a glaucous tinge on the
leaves, whose edges and keel are perfectly smooth. Stems
a foot and half or two feet high. Flowers sometimes
elegantly tipped with green.

n. 3. Curt. Mag. t. 764. (Veltheimia punica; Willd.
Sp. Pl. v. 2. 182.)—Leaves two-ranked, roughish at the edges and keel. Corolla cylindrical at the base; bell-shaped
above.—Native of the Cape, from whence it was sent by
Mr. Maffon to Kew, in 1774. It flowers late in autumn,
and seems as hardy as the others, but is smaller than even
the last. The flowers are of a uniform orange, and distigu
ished by their bell-shaped, or globose, limb. Leaves not
at all glaucous.

TRITOMA, in Entomology, a genus of the Coleoptera
order of insects; the characters of which are, that the
antennae are elevated or club-shaped, the club being perfolate,
and the anterior palpi or fkrkers hatchet-formed. It has
seven species, as follow.

BIPUSTULATUM. Black, with wing-sheaths marked by
a scarlet lateral spot. Found in England.

GLABRUM. Smooth, black, with pitchy antennae
and feet. Found in Sweden.

DUBIUM. Black, with wing-sheaths and feet tesselaceous.

VITTATUM. Red, with black wing-sheaths; fillet red.
Found in India.

MORBIS. Black, filky, with antennae and feet of the
same colour.

SERICEUM. Blackish, filky, with feet tesselaceous. Found
in Germany.

COLLARE. Black, with the sides of the thorax and ab
domen red. Found in New Holland.

TRITON, in Ancient Geography, a marsh of Africa
Propria, in which is the source of a river of the fame name;
summered by Pliny Pallantius. This lake was 20 leagues in
length from E. to W., and about six leagues wide; and it
contained several islets. The mouth of the river was in the
Meditteranean, in the gulf of the Lesser Syrtis. Herodotus
mentions this river.—Alf, a river of the ile of Crete.
Near its source was a temple, dedicated to Minerva Trito
genia.—Alf, a town of Africa, in Libya.—Alf, a town of
Greece, in Boeotia.

TRITON, in Mythology, a sea demi-god, held by the an
cients to be an officer, or trumpet, of Neptune, attending
on him, and carrying his orders and commands from sea
to sea.

The poets and painters represent him as half man, half
fish, terminating in a dolphin's tail, and bearing in one hand
a sea-shell, which ferved him as a trumpet.

Some of the ancients make him the son of Neptune, and
the nymph Salacia; Hesiod, of Neptune and Amphitrite:
Numenius, in his book De Pificationibus, makes him the
son of Oceanus and Tethys; and Lycothron, the son of
Nereus.

But though Hesiod and the mythologists only speak of
one Triton, the poets have imagined several; giving some
of them for trumpeters to all the sea-gods, particularly
to Neptune and Venus; accordingly they were frequently in
troduced on the ancient theatre, and in the naumachia.

In effect, the Tritons not only officiated as trumpeters in
Neptune's retinue, but were also supposed to draw his chariot,
i.e. the sea-shell in which he rode over the waters:
as we find in Virgil, Æneid, x. 209; Ovid, Metam. l. 10.
333; and on a medal of Claudius.

The fable of the Tritons, no doubt, took its rife from
what are called the sea-men, or mermen; for that there are
such things as sea-men has been believed in many ages. See
Marmaid and Sea-Cow.

The poets ordinarily attribute to Triton the office of calming
the waves, and of making tempefts cease. Thus, in the
first of the Metamorphoses, we read that Neptune, defiring
to
TRI

to recall the waters of the deluge, commanded Triton to
found his trumpet, at the noise of which the waters all
retired.

Thus Ovid:

"Caruleum Tritona vocat, conchaque sonanti
Inspirare jubet, fluituque et flumina signo
Jam revocare dato," &c.

And Virgil:

"Huc venit immanis Triton, et carulea concha
Exterrens freta: cui laterum tenus hispida nanti
Frons hominem prefert, in Prtin definit alvus."

Of Triton, as connected with the Argonautic expedition,
Herodotus gives the following account. Speaking of the
river Triton, which discharged itself into the lake
Tritonic, where was an island called Phla, he says it was believed
that the island must have been inhabited by the Lacedemonians;
and he adds, it was reported by tradition, that when Jason
had built at the foot of mount Pelion the ship which was
called Argo (see ARGONAUTIC), and had flowed in it a
beaumont, and a tripod of brafs, he undertook the voyage to
Delphi by the tour of Peneus creating; and that, taking his
route by the promontory of Malea, the north wind drove
him upon Libya, where he found his ship run aground in the
lake Tritonic; and while he was endeavouring to extricate
himself, a Triton appeared to him, and told him, that
if he would give him the tripod he had in his ship, he would
show him how to get clear of this danger; upon which Jason,
agreeing to the proposal, gave him the tripod, which the
Triton laid up in his temple, and foretold Jason and his crew,
that when one of their descendants should carry off
that tripod, it was fixed by fate that there should be one
hundred Greek towns built upon the lake Tritonic; in fine,
that the Libyans being informed of this oracle, kept the
tripod carefully concealed. The explication given of this
fable is, that the Triton who appeared to the voyagers
under a human form was a prince who reigned in that place,
whom Pindar and his chofistait name Eurypilus. He gave
good instructions to the heroes to avoid the fund-banks
which lie in and about the Syrtis. This, says Banier, is the
whole mythology; the prediction which they put in his mouth
having only been invented after the event; that is, after the
Greeks were settled in that part of Africa, and had built
cities there. Our heroes, in gratitude for the signal service
done them by Eurypilus, made him a present of the above-
mentioned tripod. Diodorus, who also speaks of it, says
there was upon the tripod an inscription in very ancient char-
acters, and adds, that it was preferred to the latest times,
among the people called Hesperians, in Cyrenaicum.

TRITON, in the Linnean System of Natural History, a
genus of the Mollufca order of worms; the characters of
which are, that the body is oblong, the tongue spiral, the
tentacula twelve in number, and bipartite, fix on each side,
and the three hinder ones cheliferous. There is one species,
viz. T. tibitores, which is found in the cliefs of submarine
rocks.

TRITON Avis, in Ornithology, a name under which Nie-
remberg has described a bird of the West Indies, famous for
its fine ringing, and found in Hispaniola: it is said to have
three different notes, and to be able to give breath to sounds
of all three kinds at the same time: it is also said to be a
very beautiful bird. Ray.

TRITONEA, or TRITONIA, in Mythology, a name
given to Minerva, derived from the river Triton, near which
she was born, and where she had been seen for the first

TRITONIA, in Botany, was so named by Mr. Ker,
later Gawler, from triton, a weather-cock, in allusion to the
variable direction of the flames of the different species.
Mr. Ker in Sims and Konig's Ann. of Bot. v. 1. 227.
Dryand, in Ait. Hort. Kew. v. 1. 90.—Clus and order, Tritonia
Gen. Ch. Cal. Spatia inferior, shorter than the corolla,
of two oblong, membranous, pointed or toothed valves.
Cor. of one petal, superior; tubular at the base; flurcking
in the throat; limb divided to its very bottom into fix,
regularly equal, segments, each of which, in the
lower part, is more or less contracted into a claw.
Stam. Filaments three, inserted into the tube, unconnected
with the throat, variously directed, curved, shorter than
the limb; anthers oblong, curved. Pfl. Gemen roundish;
style thread-shaped, erect; stigma three, linear, recurved,
spreading. Peric. Capsule roundish-ovate, membranous,
tumid, of three cells and three valves. Seds numerous,
globose, simple, neither winged nor pulpy, rather small.
Eff. Ch. Spatha of two membranous valves. Corolla
oblong; its limb in fix deep segments, contracted at the
base, nearly regular. Stigmas three, narrow, spreading.

The characters of this genus are confoundedly very difficult
to define; yet its intelligent author confers the species to
be easily discernible by their common habit. The corolla
in some is quite regular, in others more or less irregular, yet
never in a very strong or evident degree. "The bulb
is solid, ovate and depressed, or roundish with a point; its
coats reticulated; the outermost spotted. Leaves grassy,
broadish; very rarely crisped at the edges. Flowers never,
various in the different species, in some their limb is large,
bell-shaped, regular, recurved, the segments broad, the tube
short, with an inflated spreading throat; in others the corolla
is of a smaller size, with a longer tube, a turbinate
throat, the segments oblong, little dilated, disposed so as
slightly to imitate a two-lipped flower, one of them broader
than the rest; in others again the segments are linear-
oblong, spreading in a wheel-shaped manner, equal, the
throat but slightly dilated, and the tube very long. The
filaments of the two-lipped species are ascending, of the
regular reverse ones erect; anther in the wheel-shaped flowers
contiguous, incumbent."

Andr. Repof. t. 142.)—Leaves wavy and crisped at the margin.
Segments of the corolla flat, shorter than the tube, not quite uniform.—Native of the hills of Roda Sand
and Picketberg at the Cape of Good Hope, flowering from
October to December. Thunberg. Sent by Mr. Maillon in
1789 to Kew garden. In England it flowers in the spring,
or summer. The shortish, many-ribbed, wavy, but not
fringed, leaves mark this species. The flowers are spliced,
not numerous, of a tawny flesh-colour; the tube often red,
two inches long, curved; three lower segments of the limb
furnished with a deep-red central sripes.

Curt. Mag. t. 1275. (Gladiolus viridis; Ait. ed. 1. v. 3.
481. Vahl Enum. v. 2. 296. Ker Ann. of Bot. v. 1. 231.)
—Stalk triangular, with membranous angles. Segments
of the corolla lanceolate, shorter than the tube; five of them
ascending; one deflexed.—Found at the Cape by Mr.
Maillon, who sent it to Kew garden, in 1788, where it
blooms in July. The leaves are linear-lanceolate, with a
strong mid-rib. Spike zigzag. Flowers not numerous,
pale green, with a purplish tinge, especially in the tube, and

Q 2 at
Tritonia.

at the back of the limb. We should suppose these flowers, by their colour, to be fragrant at night.


4. **T. rosea**. Trumpet-flowered Tritonia. *Ait.* n. 3. (T. capensis; *Curt. Mag.* t. 618, and t. 1531. Gladiolus rosea; Jacq. *IC. Rar.* t. 251. *Willd. Sp. Pl.* v. i. 217. Vahl *Enum.* v. 2. 110.)—Sheath taper-pointed. Upper segment of the corolla broadest; throat funnel-shaped; tube twice the length of the limb.—Native of the Cape. Sent to Kew by Mr. Maffon in 1793, where it flowers in June and July. The stem is leafy. Leaves green, many-ribbed, taper-pointed. *Flowers* spiky, three or four inches long, flesh-coloured, or buff with purplish veins; the three lower segments fringed with crimson at the base. The corolla however varies in size as well as colour; see the figures cited.

5. **T. longiflora**. Long-flowered Tritonia. *Ait.* n. 4. (Ixia longiflora; *Willd. Sp. Pl.* v. i. 203. Redout. *Liliac.* t. 34. *Curt. Mag.* t. 256; and t. 1502. *Tritonia*. Gladiolus longiflora; *Linn. Suppl.* 96.)—Segments of the corolla regular, linear-oblong, obtuse; tube thread-shaped, angular and slightly dilated at the top; four times as long as the limb, and five times as long as the nearly equal valves of the spatha.—Native of the Cape. Introduced by Mr. Maffon in 1774, and now a general favourite in our greenhouses, flowering in the spring. The very long and slender, regular, buff-coloured *flowers*, often tinged with a rose-colour, sufficiently distinguish this elegant species. The *flask* is very tall and slender, naked except at the lower part.

6. **T. Rockenfis**. Bending-flowered Tritonia. *Ker in Curt. Mag.* t. 1503. *Ait. Epit.* 375. (Ixia paniculata; *De la Roche Diff.* 26. t. 1, according to *Mr. Ker*. Gladiolus longiflora; *Thunb. Diff.* n. 22.)—Segments of the corolla regular, elliptical, concave, scarcely as long as the slender, deflexed tube. Stamens and style prominent.—Imported from the Cape in 1839, by Messrs. Lee and Kennedy. Nearly akin to the last, to which we should, but for Mr. Ker's authority, have referred the branched variety, figured by *De la Roche*.

7. **T. lineata**. Pencilled Tritonia. *Ker Ann. of Bot.* v. i. 228. *Ait.* n. 5. (Gladiolus lineatus; *Salis. Prod.* 40. Curt. *Mag.* t. 487. Redout. *Liliac.* t. 55. *Ixia squalida*; *Willd. Sp. Pl.* v. i. 206.)—Limb of the corolla three times the length of the curved tube, bell-shaped; its upper segment large; outer ones abrupt.—Native of the Cape. Sent to Kew by Mr. Maffon in 1774, but more recently introduced into our greenhouses by way of Holland, flowering in May. The *flam* is two feet high. Leaves green, with a solitary mid-rib. Spike drooping before the flowers open, which are large, of a straw-colour, tinged with orange, and marked with dark, dark, parallel and branching, veins. Each of the three lower segments has a yellow internal spot near the base. The tube, about half an inch long, scarcely equals the length of the *spatha*.

8. **T. secuirta**. Dwarf Copper-coloured Tritonia. *Ker Ann. of Bot.* v. i. 228. *Ait.* n. 6. (Gladiolus secuirta; *Willd. Sp. Pl.* v. i. 219. Vahl *Enum.* v. 2. 109. Curt. *Mag.* t. 583. Montbretia secuirta; Redout. *Liliac.* t. 53.)—Limb of the corolla twice the length of the tube; its upper segment largest; each of the three lower bearing at its base an erect, compressed prominence. Outer valve of the *spatha* thin, with three teeth.—Found at the Cape by Mr. Maffon, who sent it to Kew in 1774. It flowers freely in May and June, and increases by offsets. The *flam* is but a span high. *Leaves* two-ranked. *Flowers* tawny; the three lower segments yellow at the base, with a deeper hue of red about the middle.

9. **T. flavus**. Yellow Tritonia. *Ker Ann. of Bot.* v. i. 228. *Ait.* n. 7. (Gladiolus flavus; *Willd. Sp. Pl.* v. i. 218. Vahl *Enum.* v. 2. 110.)—Limb of the corolla twice the length of the tube; each of the three lower segments bearing at its base an erect, compressed prominence. Outer valve of the *spatha* pointed.—Found at the Cape by Colonel William Paterion, who sent it to the famous coutes of Strathamore in 1783. The somewhat broader *leaves*, pointed at the base, and uniform deep yellow of the corolla, are said in the first edition of *Hort. Kew.* to distinglish this from the last.

10. **T. refracta**. Bent-spiked Tritonia. *Ker Ann. of Bot.* v. i. 228. (Gladiolus refractus; Jacq. *IC. Rar.* t. 241. *Willd. Sp. Pl.* v. i. 215. Vahl *Enum.* v. 2. 109.)—Spikes bent backwards. *Flowers* erect, reversed. Limb of the corolla twice the length of the tube, bell-shaped, two-lipped; its three lower segments small.—Native of the Cape. We have not heard of it in any English garden. The *flam* is branched, singularly bent, scarcely rising above the long, erect, two-ranked *leaves*. Spikes horizontal, of several *flowers*, whose three upper segments are purplish, lower yellow or orange.

11. **T. squalida**. Sweet-scented Pink Tritonia. *Ker in Curt. Mag.* t. 581. *Ait.* n. 8. (Ixia squalida; *Willd. Sp. Pl.* v. i. 206. Vahl *Enum.* v. 2. 73. I. hyalina; Redout. *Liliac.* t. 87.)—Limb of the corolla bell-shaped, regular; its segments rounded, transparent in the margin below, close together; one of them gibbous at the base.—Native of the Cape. Sent to Kew by Mr. Maffon, in 1774. The *flam* is naked, ascending, much taller than the *leaves*, which are many-ribbed, equitant; the outer ones bluntish. *Spikes* reclining, of about half a dozen large, very sweet-scented *flowers*, whose tube is scarcely half the length or their limb, and whose colours are a mixture of dull pink, with a dirty pellucid white, like wet paper. The *claw* of each segment is red, with a distinctly defined white membranous border, that of the three innermost segments lying over the others. *Style* longer than the *stamen*, as in the two following. The depreciating name of *squalida* is surely not suitable to this elegant species.

12. **T. senilis**. Open-flowered Orange Tritonia. *Ker in Curt. Mag.* t. 704. *Ait.* n. 9. (Ixia senilis; Jacq. *IC. Rar.* t. 289.)—Limb of the corolla funnel-shaped, regular; its segments obovate, dilated, transparent in the margin below. Stamens and style reclining.—Native of the Cape, said to have been imported in 1801, by Mr. W. Salibury, of the Sloane-street Botanic Garden. It blossoms in the spring, and differs from the last in having few-leaved *flowers*, of a deep rich orange-colour; the membranes edges of their segments pink. The *corolla* is also differently shaped, as its specific character expresses. The *flam* is short, scarcely exceeding the *flatha*. *Stamens* often branched.

in their lower half.—Native of the Cape, and one of the
first of its tribe cultivated in the gardens of Europe, where
it has always been a great favourite, flowering in spring.
The brilliant orange-colour of its corolla, contrasted with
the membranous transparency of the lower half of its seg-
ments, all close together, has a very striking appearance.
We have some doubts whether Miller's t. 239. f. 2. be
not rather taken from the foregoing species, which in the
shape and disposition of its segments that figure most
resembles.

14. T. deufla. Tall Copper-coloured Tritonia. Ker in
Pl. v. 1. 205. Vahl Enum. v. 1. 74. I. crocata, nigro
maculata; Andr. Repol. t. 134. I. miniatia, nigro
maculata; Redout. Lilac. t. 89.)—Limb of the corolla regular,
widely spreading; its segments imbricated, obovate, solid
throughout; the three outermost gibbous underneath. Tube
rather shorter than thespatha.—Found at the Cape of
Good Hope, by Mr. Maffon, who sent it to Kew in 1774.
Allied to the two last, but taller, with still deeper orange-
coloured flowers, whose segments have no marginal tran-
sparency. The three outermost have a sort of hollow, or de-
pression, just above the base, marked with a very dark spot,
and prominent beneath. Jacquin's Ixia miniatia is taken by
Vahl for a variety of the present, defilute of spots; but
the figure more resembles out fengnirata, n. 12, in the shape
and position of the segments of the corolla, though without
their membranous margin. See the following.

15. T. miniatia. Tall Late-flowering Tritonia. Ker in
Hort. Schoenbr. v. 1. 10. t. 24?)—Limb of the corolla
funnel-shaped, somewhat two-lipped, reversed; its segments
obovate, close, solid throughout. Tube the length of the
spatha. Found at the Cape of Good Hope, by Mr.
Maffon, who sent it to Kew garden in 1795. It flowers in
August, and is the tallest and strongest of this genus,
having a branched stem, eighteen inches or more in height.
The flowers are scentles, of a rather dull orange-colour;
their three lower segments, (turned upwards by the
reverted pouture of the flower,) marked at the base with an
eblong yellow spot, indicating a degree of irregularity in
the corolla. This circumstance does not appear in Jacquin's
figure, above quoted, where all the segments have a similar
mark. How far such characters are variable in this diffi-
cult tribe, requires a longer experience, and more intimate
practical acquaintance with it, than we can boast, to decide
with certainty. More has been done by Mr. Ker than any
other person, to clear up the subject; but a wider range of
practical observations and experiments is still wanted, in
order to a correct understanding of what makes a permanent
species. In the perception of natural genera, this botanist
seems to us to display great abilities, whether their tech-
nical limitations be, as yet, perfected or not. With respect
to colour, and even proportion of parts, in the flowers of
this family, Jacquin's reputed varieties of Ixia maculata,
in the 1st vol. of his Hortus Schonbrunnetfis, are sufficient
to drive any botanist to despair.

TRITONUS, in Music, a dissonant interval, composed
of three tones, two major and one minor; and which is,
in practice, called the sharp 4th. This interval on key
instruments is equal in nominal femitones to the falle 4th:
the numerical ratios, however, are not equal; that of
the tritonus being only 32 to 45; which is occasioned by
the tritonus having only one tone major instead of two femi-
tones major, which the falle 5th contains. See Fifth.

But the most considerable difference between the falle 5th
and the sharp 4th is, that the latter is a major discord, and

that the parts are resolved by separation; and whereas the
other is a minor discord, and resolved by approximation of
the two parts.

The chord of the sharp 4th is only an inversion of the
chord of the 5th to the sharp 7th of the key, by giving the
discord to the base.

TRITOPATORIA, τριτοπατορος, in Antiquity, a fo-
lemnity in which it was usual to pray for children to the
Στροφατορος, or gods of generation, who were sometimes called
τριτοπατορος.

TRITORIUM, in Chemistry, a vessel generally made
of glass, used for the separation of liquors of different den-

tsities, as oil and water. Its largest diameter is in the middle,
and it terminates with an aperture at each of the two extre-
mities. The lower extremity, the aperture of which is very
narrow, is dipped into the mixed liquor, and when it is suffi-
ciently filled, the upper orifice is to be flopped close, by
pressing the thumb upon it, by which means the liquor con-
tained will not run out at the lower aperture, when the vessel
is raised from the mixed liquor. When the fluids of this
liquor consists have perfectly separated according to
their respective densities, by removing the thumb, the heavy
fluid will run out at the lower extremity, and the separation
will be thus effected. Macquer's Dist. Chem.

TRITTAU, in Geography, a town of the duchy of Hol-
stein; 20 miles E. of Hamburg.

TRITYARCHI, τριταρχος, among the Athenians,
were magistrates who had the command or government of
the third part of a tribe. See Phyarchus.

TRITUM PROMONTORIUM, Seba-Row, in Ancient
Geography, a promontory of Africa, at the west entrance
of the gulf of Numidia; called by Pomponius Mela Meta-
genium.

TRITURATION, Tritura, or Tritus, formed from
triturare, to trough, of terra, I ear, rub, or grind, in Phar-
acy; grinding; the act of reducing a solid body into a subtle
powder, called also levigation, pulverisation, &c.

The trituration of woods, barks, minerals, and other hard
and dry bodies, is performed by the rotatory motion of a
pestle in metalline, glafs, agate, or Wedgwood-ware mortars;
and in mills, by means of large rollers of hard stone.

The same term is also applied to the comminuting, bruiss-
ing, and dividing of humid matters into little parts.
The trituration of moist bodies is performed in marble or flute
mortars, with pestles of wood, glafs, ivory, &c. The word
trituration is generally applied to denote the division that is
made of several bodies together, to unite them with each other;
as, e. g. the extintion of mercury in the operation of
Ethiopis mineral, and others similar.

Trituration, Boerhaave observes, has a wonderful force to
dissolve some bodies, and will render them as fluid as if they
were fused by the fire. Thus if you grind the powder of
myrrh and salt of tartar together, they will dissolve each
other. By rubbing new and bright filings of iron in a mor-
tar, with double their weight of clean sulphur, the iron
will be dissolved, fo as by diluting it with water to afford the vitri-
olum Martis.

Gold long ground in a mortar with salt of tartar, will
yield a kind of tincture; and rubbed with mercury in a mor-
tar of glafs, it entirely dissolves into a purple liquor, and be-
comes a most powerful medicine.

Dr. Langlet has written a curious treatise of the great
effects of trituration in chemistry, and describes a peculiar
way
way he employed to grind gold, by which, he says, he could render it as fluid as the fire does, and make an aurum potabile by the bare motion of a mill.

The author, in the Philosophical Transactions, mentions his way of grinding gold, and describes two engines, or philosophical mills, for the purpose; with one of which, in the space of fourteen natural days, he reduced a leaf of gold to a ducly powder, and, putting it into a shallow retort, placed in a sand-heat, he thence obtained, by gradually increasing the fire, and giving a strong one at last, a very few red drops, which, digested per se, or with tartarized spirit of wine, afforded a pure and genuine aurum potabile.

The success of this operation the doctor attributes, in a great measure, to the salt of the air, which, in grinding, plentifully mixes and unites itself with the gold.

It has been observed, that there appears to be an error in reducing vegetable matter to the lake of impalpable powder; as in this state, both during the process of grinding and afterwards, the air and light act powerfully upon them, and produce changes, which, although they be not well understood, yet appear to alter the medicinal virtues of the substances.

Trituration is also used, in Medicine, for the action of the stomoch on the food, by which it is fitted for nutriment. See Digestion.

TRIVADI, in Geography, a town of Hindoostan, in the Carnatic. The pagoda forms a citadel; 23 miles S.W. of Pondicherry. N. lat. 11° 42'. E. long. 79° 45'.

TRIVANDOOR, a town of Hindoostan, in Madura; 16 miles N. of Nattam.

TRIVATOOR, a town of Hindoostan, in Madura; 20 miles N. of Trumian.

TRIVATORE, a town of Hindoostan, in the Carnatic; 6 miles S.E. of Arcot.

TRIVELAWARY, a town of Hindoostan, in the Carnatic; 12 miles N. of Trichinopoly.

TRIVEMBAR, a town of Hindoostan, in Marawar; 27 miles N. of Ramanadporum.

TRIVENALORE, a town of Hindoostan, in the Carnatic; 13 miles N. of Tiagar.

TRIVENI, a term in the Sanscrit tongue, said to mean a triad of rivers; a junction of three of the most important streams of Hindoostan being pre-eminently distinguished by this appellation. These are the Yamuna or Jumna, the Ganga or Ganges, and the Saraswati; being, in the mythological mysticisms of the Hindoos, personifications or symbols of their three great goddesses, Lakshmi, Parvati, and Saraswati.

The Hindoo poets, as indeed all their writing priests or philosophers, and even mathematicians, seem to be, call the Triveni the three plaited locks; and elegantly wreath this idea into many pleasing allegories. See Radia.

The spot of junction of the three river-goddesses in question, near Allahabad in Bengal, is extensively esteemed very sacred; and pilgrims resort thither from distant regions to bathe in the purifying triune stream. Of this we have taken sufficient notice under our article JUNCTIONS; and under that of Suicide, an account is given of meritorious self-destruction at this revered spot. See also Sati.

The Triveni has been noticed as a fruitful source of poetical allusion.

We cannot refrain from briefly alluding, in this place, to some supposed coincidences in Irish and Indian mythology, of which see something under our articles Soma and Surya. And we allude to them here in view to the opportunity of saying that poetical traditions exist, and perhaps still exist, in Ireland of a mythological origin and junction of three rivers, reminding us strongly of the Indian Triveni. The Irish rivers appertain to the county of Kilkenny; and our own Sperner has described them so exactly in the style of Eastern hyperbole, that we must invite the reader to turn to our article KILKENNY, where he will find an extract from Sperner descriptive of the mythological origin and junction of the Irish Triveni, that may be almost suspected as of Oriental origin.

TRIVENTO, in Geography, a town of Naples, in the county of Molise, the see of a bishop, immediately under the pope; 11 miles N. of Molise.

TRIVERBIAL DAYS, in the Roman Calendar, denoted judicial days, or such as were allowed to the prator for hearing of cauæ.

They were otherwise called dies fasti, in quibus licebat pratoori fari tria verba, do, dicho, addicio.

Of these court-days, the Romans had only twenty-eight in the whole year; whereas three courts in the year is term-time, in which three courts constantly fit for the dispatch of business; besides the close attendance of the court of chancery for determining suits in equity, and the numerous courts of alizse and nifi prius that sit in vacation for the trial of matters of fact.

TRIVESPER, in Mythology, one of the epithets of Hercules.

TRIVET, NICHOLAS, in Biography, an English historian of the thirteenth century, was the descendant of a respectable family in Norfolk. Having entered among the Dominicans in London, he studied at Oxford and at Paris; and at the latter place collected from books on the history of the Normans and Franks such passages as related to the English nation, and supplied their defects from the best accounts which he could procure in his own country. In this way he composed his ‘‘Annals of the Six Kings of England sprung from the Counts of Anjou,’’ introducing a detail of the most remarkable events that occurred under the Roman pontiffs, the emperors, the kings of France, and other contemporary princes, together with an account of learned men, particularly of his own order, and intending that his work should be a continuation of that of William of Malmibury. He also wrote various other works, partly containing illustrations of ancient authors, but none of them were printed, except his commentary on St. Augustine’s book De Civitate Dei.” Soon after his return from France he became prior of a monastery in London, where he died in 1328, at the age of nearly 70 years. His historical work has passed through several editions under different titles, for which we refer to Aikin’s Gen. Biog.

TRIVIAL NAMES, Nomina Trivialia, in Botany, were first used by Linnaeus in his dissertation entitled Pan Sueus, published at Upsal in 1749. The plants there enumerated, with a view to their economical qualities as the food of domestic cattle, are each designated by its generic and specific name. The same measure was adopted in the first edition of the Species Plantarum, published four years after, and was extended subsequently to every department of natural history. Linnaeus originally intended his specific definitions to be used as names; but however compendiously such might be constructed, they were soon found totally unmanageable for that purpose. He therefore adopted the method of Rinvus, of mentioning each plant by a sort of appellative, in addition to its generic name; not intending, like Rinvus, that such appellative should comprehend the specific definition of the plant, which Linnaeus knew to be impossible. That no such expectation might be formed of these names, and that students might not too much rely on them, as any thing like definitions, he termed them nomina trivialia, as serving for common
They are now however usually called specific names, in contradistinction to generic ones; the original specific names of Linnaeus being at present more properly termed specific definitions, or differences. Trivial names may contain the essential characters of the several species, as Sagina procumbens and aptata, in which case they are but a repetition, or an anticipation, of the specific differences. They more usually serve to express some concomitant circumstance, tolerably certain as a distinctive mark of each species, though not in the specific character, such as annua, perennis, fruticosa; or alba, lutea, rubra, &c. Former appellations of each species, such as Hydrophytus and Pericarpo, especially if the plants be remarkable for their medical or economic usages, as Cinnamomum, Rhubarb, Althaea, Napus, Rapa, &c. are very commodious, though injudiciously laid aside by some reformers. These must always begin with a capital letter, being proper names, not required to agree in gender with the generic name. In Zoology, such appellations of species as we have last mentioned are peculiarly useful, and generally preferred by Linnaeus to all others.

TRIVICAR Y, in Geography, a town of Hindooftan, in the Carnatic; 20 miles S.E. of Gingeer.

TRIVICUM, Trivio, in Ancient Geography, a small town of Italy, on the frontiers of the Hirpin and of Apulia. It lay on the Trajan way, at a distance E. of Benevento.

TRIVIDHA, in Mythology, a name of the Hindoo goddes Parvati. The word is said to mean three-fold, the Hindoo goddesses corresponding in many points with the triple Hecate of the Greeks.

TRIVIER, in Geography, a town of France, in the department of the Seine; 6 miles N.E. of Biella.

TRIVIGGLO BOY, a bay in the gulf of Honduras, on the coast of Mexico.

TRIVIGNANO, a town of Italy, in the Trevisian; 7 miles W.N.W. of Treviso.

TRIVIKERA, or Trivikrama, in Mythology, a name of the Hindoo god Vishnu. It means the three-steeper, alluding to his having in one of his avatars, or incarnations, received a powerful sovereign into a promise of giving him all he could cover in the three steps.

TRIVIUM, a term invented in the times of barbarism to express the three sciences that were first learned in the schools, viz. grammar, rhetoric, and logic; and the schools in which their sciences were taught were called triacites. The quadrivium, to which the scholastic next proceeded in his way to the summit of literary fame, comprehended the four mathematical sciences, viz. arithmetic, music, geometry, and astronomy.

TRIUMFETTA, in Botany, named by Plinier, serves to commemorate John Baptist Triumfetti, of Bologna, doctor in medicine and philosophy, and lecturer at the botanical garden of Rome, which was under his direction. He published there, in 1685, a thin quarto volume entitled Observationes de ortu ac vegetazione plantarum, including descriptions and engravings of several new species. This is an able work, though more frequently quoted for its figures than its philosophy, a very common cafe. The author published in 1703 a refutation of some criticisms that had appeared against his book. He died in 1707. His brother, Leibus Triumfetti, likewise professor of botany at Rome, is said to have been well supplied in the knowledge of plants, though he does not appear as an author.—Linn. Gen. 239. Schreb. 321. 832. Willd. Sp. Pl. v. 2. 853. Mart. Mill. Dict. v. 4. Ait. Hort. Kew-v. 3. 145. Plun. Gen. 60 t. 8. Juss. 290. Lamarck Illustr. t. 400. Gérard. t. 111. (Bartramia; Linn. Gen. cd. 5. 184. Lamarck Illustr. t. 400. Gérard. t. 111.)—Clads and order, Dodonaea Monogynia. Nat. Ord. Columnifera, Linn. Tibare, Jaffi.

Gen. Ch. Cal. Perianth inferior, of five lanceolate, deciduous leaves, with a brilfly point just below the summit. Cor. Petals five, linear, obtuse, cret, concave, bent backward just above the base. Stam. Filaments sixteen, equal, ascending, awl-shaped, straight, the length of the corolla; anthers simple, roundish, of two cells. Pfl. Germin superior, roundish; fyle the length of the stamens; frigmon in two acute divisions. Peric. Capsule globose, covered all over with hooked prickles, separaring into four cells. Seeds or two or in each cell, cret, convex at the outside, angular at the inner.

Eff. Ch. Calyx of five leaves, deciduous. Petals five. Capsule prickly, separaring into four parts.

Obi. The supposedwant of a calyx in the original Triumfetta is a manifest error, subsequently corrected by Linnaeus; as is likewise, if we mistake not, the dorfal point attributed to each petal. Yet Gérard uses the former character to strengthen the difference between Triumfetta and the original Bartramia, though purely every principle of character and habit proclaim their identity. Bartramia therefor Pe, is now retained as the name of a very difficult and elegant genus of Mofes. See Moxey.

1. T. Lappula. Bar Triumfetta. Linn. Sp. Pl. 637. Willd. n. 11. Ait. n. 1. (T. fructu echinato racemoso; Plum. Is. 253. t. 255.) Lappula bermondus althoeides fructa, fructu orbiculari majore; Phant. Phyt. 1. 245 f. 7.)—Leaves heart-shaped at the base. Calyx soon deciduous. Flowers in densely whorled aggregate spikes.—Native of the West Indies and South America. A shrub or four or five feet high, flowering about July and August in our foves, where it was cultivated in Miller's time, bat is seldom much noticed, the yellow flowers being small and inconspicuous. The leaves are divided, alternate, several inches broad, roundish, toothed, downy, with three or five fround acuté lobes. Capsule the size of a pea, armed with prominent hooked prickles, which flick to the coats of animals, and are widely diterferent, each capsule splitting when ripe into four parts, lodging solitary seeds. The spikes are terminal, several together, very fevere.

2. T. glandulosa. Glandular Triumfetta. Forsk. Cat. Fl. Arab. Fel. 112. n. 297. Val. Symb. v. 3. 62. Willd. n. 239.—Leaves ovato-lanceolate; downy and hoary beneath; their lower ferratures more or less glandular. Flowers axillary, from the upper leaves.—Gathered by Forskall in the middle region of the hills of Arabia Felix. Branches woody, round, villous. Leaves on short stalks, numeros, three inches long, gradually smaller upward, clothed on both fides with soft hairy hairs, but greened on the upper; entire at the base, but otherwise ferrated. Stipulas awl-shaped.

3. T. Bartramia. Currant-leaved Triumfetta. Linn. Sp. Pl. 638. Willd. n. 3. Ait. n. 2. (Lappago amboinica; Rumph. Amboin. v. 6. book 15. p. 15. f. 2.) Lappula bermondus tetraspermom fructi falo, echinus orbicularius ad foliis exortis plurrima ad foliis felfibus; Phant. Phyt. 1. 41 f. 5.)—Leaves acutely lobed and toothed; entire at the base; roughish on both fides. Flowers racemo-ro, partly aggregate; the lower ones axillary.—Native of the East Indies. The leaves are roughish to the touch, not downy. We are not certain of having seen authentic specimens, Linnaeus having been very superficially acquainted with the species of this genus. Our's has but four feed in each capsule.

loped, pointed; softly downy on both sides. Stem erect.
—Native of the island of Mauritius. We have a specimen from thence, given by Thouin to the younger Linnaeus, which we conceive must be Vahl's plant, though, being in seed, the inflorescence has a racemose appearance, the floral leaves having perhaps fallen off. The stem is round, downy.

Leaves alternate, flaked, two or three inches long, more or less evidently five-ribbed, unequally ferrated, clothed with soft hairy hairs on both sides, but much the most copiously on the under; the base is undivided, not heart-shaped. Stipules lanceolate, tapering, fringed, of a rusty hue. Flowers from the biforms of the upper leaves, according to Vahl.

In our specimen, which answers in other respects to his description, the calyx, smaller than a pea, form compound, terminal, interrupted clusters; their partial flanks aggregate, deflexed, from a quarter to half an inch long. The prickles of each capsule are copiously barbed with minute, reflexed, pale hairs.

5. **T. procumbens**. Procentum Triumfetta. Forl. Prodr. 35. Willd. n. 5. — Leaves roundish-heart-shaped, obtuse, slightly three-lobed; very downy beneath. Stem procumbent.—Native of the Society isles. Our specimen is from Otaheite, gathered by the younger Forster. The stem is woody, round, downy and hoary; the younger branches leafy. Leaves about the size and shape of those of a gooseberry, bluntly ferrated, usually three-lobed, on long downy stalks; their upper side green, nearly even, clothed with scattered, simple, deciduous hairs; the under pale, covered with soft hairy hairs, and reticulated with prominent veins. Of the flowers or fruit nothing is mentioned, nor does the specimen before us show traces of either.

6. **T. hirta**. Hairy-panicled Triumfetta. Vahl Symb. v. 3. 63. Willd. n. 6. — Leaves three-lobed, acute; smooth above. Panicle terminal, compound, hairy. — Found by Von Rohr, in the West Indian island of St. Martin. Stem shrubbery. Leaves three or four inches in length and breadth, seven-ribbed, unequally ferrated; three or five of the lowermost ferratures glandular; the base rather heart-shaped; the extremity divided into three ovate, dilated, pointed lobes: the under side is clothed with very minute hairy pubescence, and its ribs with long scattered hairs.

Footstalks most hairy when young. Panicle diffuse, with alternate, twice or thrice forked branches, most hairy in the lower part. Flowers small, flaked, solitary at the forks of the panicle, but otherwise aggregate. Calyx hoary. Vahl.

7. **T. semilirata**. Mallow-leaved Triumfetta. Linn. Mant. 73. Willd. n. 7. Alt. n. 3. Jacq. Amer. 147. Hort. Ind. v. 3. 41. t. 76. (T. n. 2; Browne Jam. 233.) — Leaves divided half way down into three lobes. Panicle terminal, compound, downy.—Native of the West Indies. Introduced at Kew in 1773, by John earl of Bute. It flowers in the flower in July. The stem is shrubbery, bushy. Leaves clothed on both sides with fine, soft, silky hairs. Flowers yellow, not many together, in more or less compound terminal panicles. Browne says, the leaves, steeped for some time in water, give out a copious clear mucus; and that the fibres of the bark serve, in the inland parts of Jamaica, to make ropes, &c. We do not by any means understand Linnaeus's companion of this species to be *T. Lappula*. He had no authentic specimen of either.

8. **T. grandiflora**. Large-flowered Triumfetta. "Vahl Eclog. v. 2. 34." Willd. n. 8. — "Leaves ovate, undivided, somewhat heart-shaped, ferrated, rather hairy; the floral ones lanceolate. Branches hairy." — Native of the

island of Monteferrat. Corolla twice or thrice as large as in any other species with which Vahl was acquainted.

9. **T. macrophylla**. Large-leaved Triumfetta. "Vahl Eclog. v. 2. 34." Willd. n. 9. — "Leaves ovate-heart-shaped, undivided, unequally ferrated, pointed, downy; glandular at the base." — Native of South America. Like *T. Lappula*, but having a calyx. Vahl judged it to be a different species. We have already expressed our disbelieve of the want of a calyx in any species of this genus. Plummer distinctly represents one in his generic figures, taken from *T. Lappula* itself. The *macrophylla* is said to differ from what we shall next describe, in the shape, as well as downy, of its foliage.

10. **T. rhombifolia**. Rhomb-leaved Triumfetta. Swartz Inc. Oec. 863. Willd. n. 10. misprint. (T. rhomboidea; Jacq. Amer. 147. t. 90.) — Leaves rhomboid, slightly hairy; the uppermost ovato-lanceolate, nearly fleshy. Flowers in axillary tufts.—Native of dry, waste, bushy places in Jamaica, and other parts of the West Indies. The stem is shrubby, two or three feet high, erect, branched, downy. Leaves contracted and entire at the base; the lower ones rhombid, and somewhat hexagonal, an inch and half long, on footstalks nearly of their own length; all rugose and more or less hairy. Flowers pale, in axillary tufts, accompanying most of the upper or smaller, each tuft of about three or three and a half flower-stalks. Petals with hairy claws, and five nectariferous glands at their base. Capsule of three single-seeded cells. Swartz.

11. **T. annua**. Annual Triumfetta. Linn. Mant. 73. Willd. n. 11. Alt. n. 4. (F. foliis oblongo-ovatis, obv. ferratis, petolis longiflimal; Mill. Lc. v. 2. 159. t. 298.) — Leaves ovate, acute, ferrated, undivided; rarely three-lobed.—Native of the East Indies, flowering with us in August and September. Miller cultivated this for curiosity; but it has nothing to excite popular admiration. The root is annual. Leaves three or four inches long, on long stalks; but it does not appear from Miller's description, whether they are smooth, downy, or rough. Flowers small, deep yellow, in tufts at the ends of the branches; sometimes with only four petals and eight stamens. Capsule of four single-seeded cells.

**Triumfetta**, in Gardening, furnishes plants of the shrubbery and herbageous kinds; among which the species cultivated are, the prickly-seeded *Triumfetta* (T. lappula), and the annual *Triumfetta* (T. annua).

**Method of Culture**. These plants are increased by seeds, which must be procured from their native places, and be sown on a hot-bed, or in pots plunged in the sand-bed of the flower: when the plants have one or two inches growth, they should be removed into separate pots, re-plunging them in the sand-bed till well re-rooted.

They afterwards require to be kept constantly in the flower, or hot-house, and to have the management of other ligeous plants of the flower kind.

They produce variety in flower collections.

**TRIUMPH, Triumphus, a ceremony, or solemnity, practised among the ancient Romans, to do honour to a victorious general, by affording him a magnificent entry into their city.**

The triumph was the most pompous spectacle known among the ancients; authors usually attribute its invention to Buceus, and derive the term from στίμωρον, one of his titles; and tell us, that he first triumphed upon the conquest of the Indians; and yet this ceremony was only in use among the Romans.

As long as the ancient discipline of the republic continued, no general could pretend to a triumph who had not extended the...
the limits of the empire, and slain at least five thousand of his enemies in battle, without any considerable loss on his own part; to this purpose an express law was established, and he was obliged to make oath before the senators, that the account delivered to the senate was true. But this law became obsolete, and intrigue and faction procured a triumph in favour of generals whose merit was not very considerable.

The general who vanquished his enemies in a naval engagement, had also the honour of a naval triumph. These were first granted to C. Duilius, in the year 449, after his defeat of the Carthaginians.

The triumph was of two kinds, the left and the greater. The left triumph was granted upon a victory over some unequal and unworthy enemy, as over pirates, slaves, &c. This they called ovatio, because the only sacrifices offered in it were sheep.

The greater triumph, called also curulis, and simply the triumph, was decreed by the senate to a general upon the conquering of a province, or gaining a single battle. The order and economy of the triumph were thus: the general having disparched couriers with tidings of his success, the senate met in Bellona's temple to read the letters; this done, they fend him the title Imperator, with orders for him to return, and bring his victorious troops along with him.

When he was arrived near the city, the general and principal officers took oath of the truth of the victory; and the day of triumph was appointed.

The day being arrived, the senate went to meet the conqueror without the gate called Capena, or Triumphalis, and marched in order before him to the Capitol. He was richly clad in a purple robe, embroidered with figures of gold, setting forth his glorious achievements; his buffoons were beted with pearl, and he wore a crown, which at first was only laurel, but afterwards was gold; in one hand he bore a laurel branch, and in the other a truncheon. He was drawn in a car, or chariot, adorned with ivory and plates of gold, drawn usually by two white horses; though sometimes by other animals, as that of Pompey, when he triumphed over Africa, by elephants; that of Mark Antony, by lions; that of Heliogabalus, by tygers; that of Aurelian, by deer; and that of Nero, by hermaphrodite mares, &c.

At his feet were his children, or sometimes on the chariot-horses. It is added, that the public executioner was behind him, to remind him, from time to time, that these honours were transitory, and would not screen him from the severity of the laws, if he should ever be found delinquent.

The cavalcade was led up by the musicians, who had crowns on their heads; after them came several chariots, in which were plans of the cities and countries subdued, done in relief: they were followed by the spoils taken from the enemy, their horses, arms, gold, silver, machines, tents, &c. After these came the kings, princes, or generals subdued, loaded with chains, and followed by mimics and buffoons, who infulted over their misfortunes. Next came the officers of the conquering troops, with crowns on their heads.

After these appeared the triumphal chariot, before which, as it passed, they all along flrewed flowers, and the music played in praise of the conqueror amidst the loud acclamations of the people, crying Io triumphi!

The chariot was followed by the senate, clad in white robes; and the senate by such citizens as had been set at liberty or ransomed.

The procession was closed by the priests, and their officers andutenils, with a white ox led along for the chief victim. In this order they proceeded through the triumphal gate, along the Via Sacra, to the Capitol, where the victims were slain.

In the mean time all the temples were open, and all the altars loaded with offerings and incense; games and combats were celebrated in the public places, and rejoicings appeared everywhere.

What was terrible amidst all this mirth was, that the captives, when arrived at the forum, were led back to prison and strangled; it being a point of religion with them, not to touch the victims till they had taken full revenge of their enemies. The rites and sacrifices being concluded, the triumpher treated the people in the Capitol, under the porticoes, and sometimes in Hercules's temple.

The most considerable triumphs were those of Caesar after the taking of Utica, and of Augustus after the victory of Actium. Caesar had four triumphs, which lasted four days, and were conducted with the most extraordinary splendour and magnificence. The first was the triumph of the Gauls, on which occasion there were presented to the view of the Romans the names ofthree hundred nations and eight hundred cities subdued by the death of a million of enemies, which Caesar had defeated in several battles. The second triumph was that of Egypt: the third represented the defeat of Pharnaces; and the fourth exhibited pictures of Scipio, Petreius, and Cato.

The triumph of Augustus lasted three successive days, and was not less magnificent than the former.

After Augustus, the honour of a triumph became an appendage of sovereignty.

TRIUMPHAL Arch, Car, and Column. See the articles.

TRIUMPHAL Crown, or Garland. See CROWN. This is said to have been taken from Apollo's crowning his head with a laurel, after killing the Delphian serpent.

TRIUMPHAL Gown, toga triumphalis. See TOGA.

TRIUMPHANT CHURCH. See CHURCH.

TRIUMPHO de la Cruz, in Geography, a cape on the coast of Honduras. N. lat. 15° 50'. W. long. 88° 25'.

TRIUMVIR, one of three persons who govern absolutely, and with equal authority, in a state.

The word is little used but in the Roman history. Caesar, Crassus, and Pompey, were the first triumvirs, i.e. the first who divided the government of the republic among them.

There were also other officers, called triumviri, triumviris; as the triumviri, or triumviri capitales, created in the year of Rome 463, to take care of prisoners, and superintend the execution of criminals.

Triumviri monetales, who were magistrates created at the same time to superintend the coining of the money: whence that mark still extant on many ancient coins, IIIVIRI. They seem to have been created about the time of the first coinage of silver in Rome, or 266 years B.C. Pomponius ascribes their first creation to the year of Rome 463, or 289 B.C. These officers were very considerable, and were chosen out of the senatorial rank, till Augustus appointed them from the equestrian, and the alteration seems to have continued. However this be, the title triumviri remained till after Caracalla, as appears from inscriptions given us by Gruter, and by Buteroue. But under Aurelian it is probable there was but one matter of the Roman mint, called the “Rationalis,” which change is supposed to have taken place under Gallienus. The “Rationalis” was succeeded by the “Procurator monetae.” The triumviri made part of the centumviri. The title they bear on medals, which is common on the coins of Augustus and Tiberius, is IIIVIRI. A.A.E.F, triumviri auro, argento, are, flancl, sertiendo, Rr.
which signifies, that they had the direction of casting and striking of gold, silver, and brass. Julius made quattuor virii, who continued for 15 years, till the battle of Actium, when Augustus reformed the triumvirii.

There were also triumvirii aditus reficiendi, officers appointed to look at the reparation of temples; triumvirii colonis deducendi, for the conducting and settling of colonies; triumvirii, for the raising of troops; nocturnal triumvirii, to prevent or extinguishe fires; triumvirii, to review the forces, &c.

In the Acilian family we read of one M. Acilius IIIIVIR VALETU; that is, triumvir of health, or a magistrate of health. M. Spanheim takes him to have been a magistrate established to perform sacrifices to the gods of health, to dedicate their temples, &c.

Onuphrius and Vaillant read triumvir valetudinis; Patin, triumvir valetudinariorum; but M. Spanheim, with much more reason, reads triumvir valetudo; in like manner, as on a medal of the Aquilian family, we read IIIIVIR VIRTUS; signifying that one M. Aquilius had been made triumvir to repair the temple of Virtue, and Acilius that of Health.

TRIUMVIRATE, TRIUMVIRATUS, an absolute government administered by three persons, with an equal authority.

There are two famous triumvirates at Rome; Pompey, Caesar, and Crassus, established the first; and Augustus, Mark Antony, and Lepidus, the second.

This latter triumvirate gave the last blow to the liberty of the republic. Augustus having vanquished Lepidus and Antony, the triumvirate funk into a monarchy.

TRIUNE, Tri in Uno, three in one; a term sometimes applied to God, to express the unity of the Godhead, in a trinity of persons.


Gen. Ch. Common Calyx imbricated, ovate, of eight or ten ovate-oblong, pointed, convex, nearly equal scales; the outermost slightly keeled, membranous at the tip. Cor. compound. Perfect florets, in the dish, numerous, funnel-shaped, with a very short tube, and upright five-leaf limb. Female ones, in the radius, fewer, shorter, funnel-shaped, with a compressed tube, and a three-leaf limb, whose hinder segment is larger than the two in front. Stam. in the florets of the dish, Filaments five, the length of the tube; anthers united into a five-toothed cylinder, rising above the limb. Pîf. in the florets of the dish, German linear, downy; style thread-shaped, the length of the flamines, divided at the top; ligmas reflexed: in the female florets, German oblong; style thread-shaped, divided at the top; ligmas reflexed. Peric. none, except the closed unalter d calyx. Seed of the florets of the dish, often abortive: of the female ones ovate, slightly compressed, bordered, convex behind, obtuse, hairy, and somewhat triangular, at the summit. Down none. Recept. chaffy, with oblong, acute, concave, membranous scales.


1. T. tersinithinae. Balsamic Trixis. Swartz Ind. Occ. 1375. Willd. n. 1.—Branches rough. Leaves ovate, finely serrated; rough with minute bristles above; with short dense hairs beneath.—Native of rocky valleys among the mountains of the west side of Jamaica, flowering in May. The stem is shaggy, six feet high, rough, with opposite, round, leafy branches, rough with very dense, short, rigid hairs, as are also the footstalk. Leaves opposite, crossing each other, from four to six inches, or more, in length, and three, or more, in breadth, bright green, finely and acutely serrated, veiny, somewhat triple-ribbed; rough like a file above; hairy or downy beneath; tapering at each end. Stipulas none. Flowers very numerous, small, white, fragrant, but acquiring a turpentine scent when bruised. They compose large, terminal, corymbose, dense panicules, with opposite downy stalks, and hairy awl-shaped bracteas.

2. T. apera. Harsh-leaved Trixis. Swartz Prodr. 115. Wild. n. 2. (T. icabara; Swartz Ind. Occ. 1378. Baileyera apera; Aubl. Guian. 804. t. 317.)—Branches silky, with close-pressed hairs. Leaves ovate, serrated, taper-pointed; harsh above; rough with depressed hairs beneath.—Native of Guiana, Cayenne, and the West Indies. As tall as the last, but of a more slender habit. Branches smooth to the touch, being covered with close hairs, pointing upwards, not with rigid prominent bristles, as in the foregoing. Leaves not half so large, rough like a fine file, on the upper surface, when full-grown; pale beneath, with flattened, not prominent, bristly hairs. Flowers larger, but fewer, in looser panicles. We cannot, on an examination of specimens, doubt this being Aublet's plant, and therefore we retain the original specific name. His B. stylophorus appears to be, as Willdenow makes it, a mere variety, though his apera only is used for intoxicating fish.

3. T. esula. Jagged Trixis. Swartz Prodr. 115. Ind. Occ. 1377. Willd. n. 3.—Branches bristle. Leaves broadly-ovate, with deep irregular notches and fissions; roughish on both sides; pale beneath.—Native of various parts of the West Indies. This is the size of the first species, but its leaves are more detoid, deeply jagged, and less hairy, though roughish with minute scattered bristles. Flowers white, much like the first, but fewer and rather larger, on hairy stalks. The calyx-scales, in every one of our specimens, much broader and rounder than Swartz's figure represents. Aublet gives five teeth to all his florets.

TROADENSE MAMM, in Natural History, a name given by the ancients to a species of white marble, dug in Mount Ida, and greatly used in building.

TROARN, or Trouard, in Geography, a town of France, in the department of the Calvados, on the Dive; 6 miles E. of Caen.

TROAS, the Troads, in Ancient Geography, a country of Asia Minor, commencing at the premonitory Leuctum, and extending as far as the Propontide. It took its name from the famous city of Troy, its capital. It extended a little towards the south. If indeed under the appellation of Troade we comprehend the whole extent of the country which was subject to the Trojans, that is, almost the whole kingdom of Priam, we must comprehend almost the whole extent of the two Mygian and Lesser Phrygia. But the Troade, properly speaking, comprised merely the country which lay between the Dardania to the north-east, and the country of the Leleges, to the south-east, the Hellepont and the Aegean sea. Ptolemy includes the Troade in Lesser Phrygia. Its principal rivers were the Simois, the Scamander or Xanthippus, and the Andrus. Its principal towns were Troja or Ilum Sigeum, Sminthe, &c.

TROAS—ALEXANDRIA. See Alexandria.
TROAT, among Sportsmen, the cry of a buck in rutting time.

TROCADIE, in Geography, a small island in the gulf of St. Lawrence, near the north coast of St. John's island.

TROCAR, or TROCHAR, an instrument commonly used in Surgery, for tapping the abdomen, in cafes of ascites and ovarian dropsy; the tunica vaginalis, in cafes of hydrocele; the joints, in bad cafes of hydrops articuli, &c. Trocars are also employed for tapping the bladder, when there is no other mode of evacuating the urine, and the symptoms which the patient suffers are so urgent, that no time remains for the trial of milder plans of relief. Abscesses have likewise been opened in some instances with a trocar; though it must be allowed that, in these cafes, the lancet is generally a better instrument.

A trocar consists of two pieces, viz. a perforator or fillet, and a silver canula. The latter is so constructed and adapted to the first part of the instrument, that when the puncture is made, they both enter the wound together with perfect ease; after which, the fillet being withdrawn, the canula remains in the wound, and affords a convenient channel for the escape of the fluid outward.

Such are the uses of a trocar, and the principles upon which the instrument ought to be made. It has been proposed to make the perforator with a flat lancet-point, in order that it may enter the flesh with greater facility; but time and experience seem still to give the preference to the fillet, which is of a triangular shape. It is true, that it cannot so readily make the necessary puncture; yet if sharp, and in good condition, no great fault can be found with it, in regard to the difficulty of making it enter the flesh; and it is certain, that its canula is better calculated than the tube of a flat trocar to afford an outlet to fluids, which are at all thick and gelatinous.

The trocar is an instrument which should never be used for the discharge of fluids, except when the practioner knows with certainty, not only that such fluids are present, but also that their quantity is considerable, so that no injury will be done to the parts beyond them by the sudden introduction of the instrument. In all other cafes, cautiously making a small puncture with a lancet, is the most prudent practice. Whenever a trocar is used, surgeons likewise avoid introducing the instrument to a dangerous depth.

The infant the perforator has passed through such parts as intervene between the fluid and the surface of the body, it has performed all that it ought to do: the attentive operator feels a sudden cessation of respiration to the infant, and he immediately holds back the fillet, whilst he only pushes forward the canula. See PARACENTESIS.

TROCHAIC, TROCHAICUS, in the Latin Poetry, a kind of verse consisting of trochees, or in which that foot predominates; as the iambus does in the iambic.

The 18th ode of the 2d book of Horace's Odes consists of strophes of two verses, the first of which is trochaic; meter catalectic, i.e. trochaic, composed of three trochees, and a syllable at the end, or wanting a syllable in the first foot; which some call the Euripidean trochaic:

---\n
Nōn | ēbār | nēque | ā̄u | rē̄m
Largiūra | flēgōs.

Long verses of fifteen half feet, which are more particularly distinguished by the name of trochaic, are nothing more than tetrameter iambics, or of eight feet, the first of which wants a syllable; as there are others where it is wanting at the end. Thus,---

Prō | pēōs | tē māg | nōs, pāu | ĕm fūp | pēićī | fātīs | īd
pārīs. Ter.

TROCHANTER, MAJOR and MINOR, in Anatomy, two considerable processes of the thigh-bone. See EXTREMITIES.

TROCHAR, in Surgery. See TROCAR.

TROCHE, TROCHICUS, in Pharmacy, a form of medicine, made into a cake or tablet, to be held in the mouth to diffuse gradually.

The troche is properly a dry composition; the chief ingredients of which, after having been brought into a very fine powder, and mixed with sugar, are incorporated with some proper liquor, as distilled waters, wine, vinegar, or mucilages, and reduced into a mafs, which is moulded into little cakes, or bulls of any form, at pleasure, and dried in the air, far from the fire. As remedies they are of little importance; and the preparation of them properly belongs to the confectioners; and they should be altogether rejected from the Pharmacopœia, as the London and Dublin colleges have done.

There have been and still are troches of various kinds, and for various intentions; as purgative, alterative, operative, corrosive, &c. troches.

Latin authors call them paffilli, rotula, placntula, orbes, and orbiculi; and the English, frequently, loosers.

The following troches are described in the Edinburgh Pharmacopoeia; viz.

Troches of Carbonate of Lime, prepared by rubbing to powder four ounces of prepared carbonate of lime, an ounce of gum arabic, one dram of nutmegs, and fix ounces of refined sugar, and forming them by means of water into a mafs fit for making troches. These are intended as antacids; but in the flat of the stomach which requires them, the efficacy of the carbonate of lime is counteracted by the sugar.

Troches of Liquorice are formed by dissolving in hot water extract of liquorice and gum arabic, of each one part, and two parts of refined sugar, and then straining; and afterwards evaporating the solution into a proper flat for troches. These troches are demulcent, and serve to allay the tickling irritation which occasions coughing; but the simple extract of liquorice, refined by straining and infilpation, found in the shops under the name of refined liquorice, will answer the same purpose.

Troches of Liquorice with Opium are obtained by well rubbing two drachms of opium, with half an ounce of the tincture of halfan of Tolu; adding gradually eight ounces of simple syrup, and five ounces of extract of liquorice, softened by hot water, and afterwards sprinkling in five ounces of powdered gum arabic; then drying the mafs, and forming it into troches, each weighing ten grains. These troches are rendered more efficacious than the former for the same purpose, by the opium; fix troches containing one grain of opium, and from fix to ten may be taken in twenty-four hours.

Troches, Gum, are prepared by rubbing four parts of gum arabic, one part of flarc, and twelve parts of refined sugar to powder, and forming them into a mafs fit for forming troches. These are simple demulcents, and serve to allay a tickling cough.

Troches of Nitrates of Potash are obtained by beating to powder one part of nitrate of potafs, and three parts of refined sugar, and forming them into a mafs fit for troches, by means of mucilage of gum tragacanth. Thus nitre may be agreeably taken in the dry state, and the troches may serve to cool the mouth in inflamations, and to stop the progress of inflammatory fore-throat, when taken at its commencement. They may also be used as a general refrigerant in fevers, diluting largely during the use of them.
TROCHILUS.

do is one or two taken every second or third hour.
Thomson's Lond. Diph.

**TROCHEE.** TROCHEUS, formed of τρικελιμα, I rns, be-
cause it moves quickly, in Greek and Latin Poetry, a kind of
foot consisting of two syllables, the first long, the latter
short; such as the words νυκτε and μαμά.

The trochee is the reverse of the iambus, and has just a
contrary effect; the latter being light and sprightly, and
the former weak and languid, as all those measures which are
move from a long to a short syllable.

Some called the trochee, chezeus, because it is proper for
songs and dances. These give the denomination trocheus
 to the tribrachys. Quint. lib. x. cap. 4.

**TROCHERA.** in Botany. See EHRHARTA.

**TROCHILUS, in Architecture.** a hollow member, more
usuall called, by modern architechts, the scotia; and, by our
English workmen, the c檃efent.

TROCHILUS, the Humming-bird, or Henny-shucker, in Ornitho-
ylogy, a genus of birds of the order Pica; the characters of
which are, that the bill is longer than the head, fabulate-
filiform, or cylindric, slender, with slightly-thickened tip;
the upper mandible being the lower; the tongue fili-
form, consisting of two conjoined slips forming a tube, and
extenfe; the legs flender and rather short, and feet formed
for walking; the tail composed of ten feathers.

The humming-birds constitute a lively brilliant race, dif-
tinguished by their beautiful colours and diminutive fize,
peculiar natives of the American continent and adjacent
lands, and, with few exceptions, confined to the hotter re-

The genus is extensive, and it has therefore been
found convenient to divide them into two fections, viz.
the curve-billed and the straight-billed.

* Curve-billed.

**PARADISEUS.** Red; head creffed; blue wings, and two
of the tail-feathers very long. This is the Paradife hum-

**PELLA.** Red (purple-red, Shaw), with brown (black,
Shaw) head; golden (topazine, Shaw) throat; green rump,
and two very long middle tail-feathers. This is the Colibri
topaze of Buffon, the long-tailed red humming-bird of
Edwards, and the topaz humming-bird of Latham. It is
the most brilliant of this fection, and has a decided su-
periority to all the rest by its magnitude as well as colours.
The female is far inferior to the male with respect to bril-
liancy of colour. This bird is a native of several parts of
South America, but is principally found in Surinam and
Guiana, frequenting the banks of rivers and brooks. Dur-
ing flight, they flun the surface of the water like swallows.

**SUPERCILIOSUS.** Gilded or shining brown; elongated
middle tail-feathers (white at the tips, Shaw), grey be-
nath, with long bill and white eye-brows. Shaw. The
supercilious humming-bird of Latham, distinguifped from
all others by the great length of its bill, and its strongly
euneated tail. The female differs by being of a pale rufo-
grey beneath, by having a shorter bill, the lower mandible
white, and the tail chiefly cuneiform and tipped with
white. Found in Cayenne.

**POLYMUS.** Glossy-green, with black crown and tail;
violet-brown wings, and two very long outer tail-feathers.
This is the long-tailed black-cap humming-bird of Edwards,
and black-capped humming-bird of Latham. An elegant
species, of considerable fize. A native of South America,
and found also in Jamaica. The female is greenish above
and white below; the sides of the neck varied with white
and green, and the tail defitute of the two long plumes so
conspicuous in that of the male.

**FORICATUS.** Gold-green, with blue crown, and gold-
blue forked tail, and two outer feathers very long. The
long-tailed green humming-bird of Edwards, and fork-
tailed humming-bird of Latham. An elegant but rare
species; found in Jamaica.

**LEUCURUS.** Coppery-green, with brown quill-feathers;
a reddish cresent in front of the neck, and white even tail.
The white-tailed humming-bird of Edwards and Latham.
Native of Surinam.

**JUGULARIS.** Gold-green, with a tinge of dusky-blue;
with blood-red throat and breast, blackish abdomen, and
even tail. Red-breasted humming-bird of Edwards and La-
tham. The garnet-throated humming-bird of Latham is of
the same species. Found in Surinam.

**THAUMANTHIS.** Gold-green, with blackish quill-feathers,
and tail-feathers edged with white; the exterior one entirely
white on the outdfe. The admirable humming-bird of
Latham, firft defcribed by Maregrave. A native of Brazil
and several other regions of South America.

**DOMINICUS, or PECTORALIS.** Green-gold, with velvet-
black breast; white belly, and purplifh blue-tail. The
black-breasted and St. Domingo humming-birds of Latham.
The female is said to be disfigured from the male by hav-
ing the green on the fore-part of the neck divided by two
white freaks, and the breast of a paler black than that of
the male. A native of the Weft India islands.

**MANGO.** Copper-green, with black defcending throat-
festrup and abdomen; violet-brown wings, and ferrigious
tail edged with black. The Mango humming-bird of
Latham. The female is said to differ in having the two middle
tail-feathers gold-green, like the back. A native of South
America, particularly of Brazil, but found in St. Domingo,
Jamaica, and other Weft India islands. Dr. Latham men-
tions a variety of this species, in which the throat, on each
side of the black stripe, was white. Gmelin makes the
"mellivora avis maxima" of Ray and Sloane a variety of
this.

**HOLOSERICEUS.** Gilded-green, with brown wings; black
tail and abdomen, and blue pectoral bar. The black-bellied
humming-bird of Edwards and Latham. Native of Mexico
and Guiana.

**GALERITUS.** Green-gold, with brown quill-feathers, and
purple creft. Found in Chili.

**EXILIS.** Brownish-green, with a glas of red; glossy-
green creft with gilt tip, and black wings and tail. The
little humming-bird of Latham, and humming-bird of a
black colour of Bancroft. The smallest of the curve-billed
fection. Native of Guiana.

**CYANEUS.** Velvet-crimfon, with blue back, and black
wings. The crimfon-headed blue humming-bird of Latham.
A native of Mexico.

**FURCATUS.** Glossy violet-blue, with gold-green crown
and throat, and black wings, abdomen, and forked tail.
The leffer fork-tailed humming-bird of Latham. A native
of several parts of South America, and of some of the
larger West India islands.

**MACROURUS, or FORICATUS.** Gold-green, with violet
eye and neck; abdomen marked by a white spot, and
forked tail. Cayenne fork-tailed humming-bird of La-
tham.

**PURPURATUS.** Green, with crown, wings, and bifur-
cated tail purple, and wreath blue. The purple-crowned
humming-bird of Latham.

**AURATUS.** See JUGULARIS. Of this Gmelin gives a
variety, viz. with cheeks, nape and throat golden-brown; head
and body black, with shining-green.

**GRamineus.** See DOMINICUS or PECTORALIS.
VIOlaceus. Dark purple-violet, glossy on the forehead, with green and gold wings and tail, the latter tinged with black. The violet humming-bird of Latham. Native of Cayenne.

Maculatus. See Gutturalis.

Punctulatus. Gold-green, with blackish wings; shoulders and back spotted with white, and brown tail with white tip. The spotted humming-bird of Latham. Native of Mexico, where it is called "Hottentot." Albicollis. See Gutturalis, of which it is a variety.

Aurantius. Brown, with orange head; yellow throat and breast, purple wings, and ferruginous tail. The orange-headed humming-bird of Latham. Native of South America.

Flavifrons. Green, with yellow front, and black wings and tail. The yellow-fronted humming-bird of Latham, and yellow-fronted honey-fucker of Pennant.

Venusissimus. See Cyanus.

Margaritaceus. Bright-green, pearl-grey beneath, with the tail steel-blue at the base, purple-brown in the middle, and white at the tip. The grey-necked humming-bird of Latham. Conjectured by Dr. Shaw to be female?

Hirsutus. See Brasilensis.

Multicolor. See Histrio.

Cineresus. Green, ash-coloured beneath, with violet-brown wings, and rounded steel-blue tail with white tips. The ash-bellied humming-bird of Latham.

Gularis. Gold-green; white beneath, with blackish wings and tail, and deep-blue throat and vent. Probably a native of South America.

Fulvus. Yellow, with the tail-feathers and covers thick; beneath brownish. A native of South America.

Varius. Green-gold; beneath white-brown, with a double pectoral band green-blue and blood-red. Found in South America.

Cyanurus. Green; cinerous beneath, with the throat, breast, and two very long middle tail-feathers blue. The blue-tailed humming-bird of Latham. Native of New Spain.

Fucifer. Gold-green, with brown wings; white throat, and glossy blue-green breast and forked tail. Native of Paraguay.


Capensis. Green, with long middle tail-feathers, and blue wing-coverts. Ekelberg's humming-bird of Latham.

Chrysochromos. Gold-green, with very bright throat and breast; subferruginous wings, and white-edged tail. Native of Guiana.

Sparganurus. Gold-green, with emerald throat, and black forked tail, with a gold-crimson bar across the feathers. The bar-tailed humming-bird. A very beautiful species, said to be a native of Peru.

Porphyurus. Brown, with velvet-black throat, and purple neck-striped and tail. A variety of the mango, according to Latham. Native of South America and the West India islands.

Gutturalis. Green-gold, with emerald throat; whitish-rufous on each side; black breast, and black abdominal stripe. The T. gularis of Latham; and maculatus of Gmelin. The green-throated humming-bird of Latham.

Nitidus. Violet-tailed humming-bird of Latham, and T. albus of Gmelin's Linneus. Supposed by Shaw to be a variety of the preceding.

Brasilensis. Gold-green; rufescent beneath, with violet-brown wings and tail; the latter tipped with white, and white-feathered legs. The rufous-bellied humming-bird of Latham. The T. hirsutus of Gmelin's Linneus. An elegant species. Native of Brazil.

Pascuatus. Green-gold, with rufous underparts; blackish-rufous head; and a black band edged with white along each side of the body. Banded humming-bird. Native of Paraguay.

Punctatus. Gold-green; beneath brownish undulated with white; with subviolaceous wings, and tail white at the base and tip. Scalloped humming-bird, strongly allied to the Mango, and it is not impossible, says Dr. Shaw, that it may be the young, in its first year's plumage.

Auroviridis. Gold-green, with blackish wings; and steel-blue tail with white tip. Native of the West India islands.

Aurulentus. Dark gold-green, with brighter throat and shoulders; black breast, brown abdomen, and subviolaceous tail. A native of the island of Porto-Rico.

Trichiatus. Gold-green; black beneath, with three white spots on each side; brown quill-feathers, and steel-blue tail. Native of South America. Dr. Shaw conjectures that this may be only a variety of T. mango, hololocularis, or pectoralis.

Elegans. Gold-green, with black breast; violet-black wings; and greenish-black forked tail. Native of St. Domingo.

Histrio. Brown, with gold-green crown, throat, breast, and shoulders; red belly, and blue cheeks. The harlequin humming-bird of Latham and Shaw, and the multicolor of Latham and others. A highly elegant species, and remarkable for its variety of colours. Native country uncertain.

Cristatellus. Green, with shining gold-green crest; and black wings and tail. Gilt-crested humming-bird of Latham. A small and elegant species, much allied to the T. exilis.

** With straight Bills.**

Platurus. Gold-green, with brown belly, quill-feathers, and tail; the two middle tail-feathers naked with webbed tips. The racket-tailed humming-bird of Latham. This is a rare species, and a native of South America.

Latipennis, of Campylopterus of Linnaeus. Gmel. Gold-green; grey beneath, with brown wings and tail; and the shafts of the greater quill-feathers dilated and incurvated. The broad-tailed humming-bird of Latham. One of the larger humming-birds, a native of Cayenne, and a very rare species.

Auritus. Gold-green; white beneath, with slightly elongated violaceous ear-feathers, black wings, and lateral tail-feathers. The violet-eared humming-bird of Latham; an elegant species. Native of Cayenne. Gmelin mentions a variety with a purple band below the eyes, a large area near the ears, below which is a green-blue spot.

Mellichorum. Gold-green, with blue head, neck, and breast, and white nuchal bar, abdomen and tail. White-bellied humming-bird of Edwards and Latham. Native of South America, and not uncommon in Cayenne. The T. simbratus, or spotted-necked humming-bird of Latham and Gmel. Linnaeus, is supposed to be a variety. There are also other varieties mentioned by Vieillot.

Ouiriassia. Gold-green, with blue back, breast, and belly; brown quill-feathers, and golden-brown tail. The green and blue humming-bird of Edwards and Latham. Native of Surinam. N. B. The American word "Ourilia," signifying a fun-beam, is applied by some of the earlier writers to certain species of humming-birds, on account of the
the splendour of their colours. Gmelin mentions a variety, viz. T. green; beneath blue, with orange spot on the chin; quill-feathers and tail obscure.

Superbus. Gold-green, with blue crown; double black-and-white cheek-stripe, and crimson throat and breast. Stripe-checked humming-bird of Shaw. This superb humming-bird is a most beautiful species, and one of the finest of this brilliant race. Native, probably, of South America.

Sapphirinus. Bright sapphire-coloured, with slighly-gilded back; brown wings; black abdomen, and fleck-blue tail. The sapphire humming-bird of Latham. Native of South America. Gmelin mentions a variety, viz. T. with sapphire breast, white belly, and tail blue-black.

Smaragdo-sapphirinus. With bright sapphire-blue head and throat; gold-green body; brown wings, and fleck-blue tail. The sapphire and emerald humming-bird of Latham. Native of South America and the West Indies. Shaw suggests that the two last mentioned humming-birds really constitute one species. He mentions a variety of the last from Viollet, viz. the blue-gorge humming-bird.

Lucidus. Bright gold-green, with deep-blue throat, breast, and tail; and a white spot behind each eye. Supposed by Azara and Somnini to be the same with the sapphire and emerald humming-bird. Native of Paraguay.

Amerystinus. Gold-green, varied beneath with grey and brown, with amethystine throat, and forked tail. The amethystine humming-bird of Latham. Native of Cayenne.

Moschitus. Purple-brown; blackish beneath, with ruby-gold crown, topazine throat, and black-tipped tail. The ruby-necked humming-bird of Latham. To this species Dr. Shaw refers the T. elatus of Gmelin’s Linnaeus, or ruby-crested humming-bird of Edwards and Latham. This is one of the most beautiful of the straight-billed humming-birds. Native of South America, and particularly of Brazil, Guiana, and Surinam. The ruby-crested humming-bird is a variety.

Pegasus. Gold-green; grey beneath, with brown wings, and blackish-purple tail with greenish hue. Grey-bellied humming-bird and gold-throated humming-bird of Latham. Dr. Shaw suggests that this may be a young female of T. moschitus.

Hypholcus. Gilded-brown; whitish beneath, with brown crown, and gold-green stripe down the middle of the throat. The brown-crowned humming-bird of Latham, conjectured by M. Viollet to be no other than an advancing young of T. moschitus.

Carumbulus. Glossy-black, with dark-red crown and nape, fiery-red throat and breast, and gilded-rufous tail. The caruncle humming-bird of Latham is supposed to be a variety of T. moschitus; rare in Cayenne.

Chrysurus. Gold-green, with cinnamon throat, brown quill-feathers, and topazine tail. Native of Paraguay.

Colubris. Gold-green; about three inches in length; beneath white, with gold-red throat, and purple-brown wings and tail. The red-throated humming-bird of Edwards and Latham, red-throated honey-fucker of Pennant, guainumbi of Maregrave. A beautiful species. A native of America, breeding in Carolina, Florida, and, as some say, in Canada; and also a native of Jamaica and some other West India islands. The female differs in having the whole under side white, without any redness on the throat, and all the tail-feathers, exclusive of the two middle ones, tipped with white. The general history of this beautiful bird is detailed by Mr. Pennant in his Arctic Zoology. Its flight is rapid, so that it is transient as lightning, and resembling this meteor in the glare of its colours: it feeds only upon the wing, suspended over the flower from which it extracts nourishment. The most violent passions sometimes agitate the little bodies of these birds. Their contests in disputing possession of the same flower are very violent; tilting against one another with such fury, as if they intended to transfuse their antagonists with their long bills. They are fearful of mankind, coming into apartments of houses, the windows of which are left open, but when approached, darting away with admirable velocity. Their nests, made in branches of trees amidst the thick foliage, are found with difficulty: they are of elegant structure, formed on the outside with moss, and within lined with down or mossy foliage collected from the great mullein, but sometimes constructed of flax, hemp, hair, and other soft materials. The female is said to be the builder, and the male supplies her with materials: both affight in the labour of incubation, which lasts twelve days: they lay only two eggs, which are white, and as small as peas. It is suggested that the patch-necked humming-bird of Latham’s first supplement is no other than a young male of this species. The tominoe of Gmelin is a variety.

Rubineus. Green-gold, with gold-red throat, purplish-brown wings, and rufous tail. The ruby-throated humming-bird of Latham. Native of South America, and particularly of Brazil, and is considered as one of the rarer kinds of humming-birds.

Mellisugus. Gold-green, with glossy blue-green throat, violet-black wings, and feathered legs. The emerald-throated humming-bird of Shaw, the all-green humming-bird of Edwards, and the Cayenne humming-bird of Latham. This is one of Maregrave’s guainumbi.

Collaris. Rufous, paler beneath, with gold-green crown, and gold-red throat, with the feathers elongated on each side. The rufus-necked humming-bird of Latham. This species is numerous in Nootka Sound.


Eubrostris. Blackish, with gold-green throat; each feather edged with grey, and white bill, thighs, and vent. The white-billed humming-bird of Shaw. Native of Cayenne.

Violleti. Blackish-olive, with golden gliss; beneath whitish, with violet-brown quill-feathers. Viollet’s humming-bird, and black humming-bird of Latham. This small species is common in the island of St. Domingo, supposed by Viollet to be the T. niger of Linnaeus.

Lecocrotophos. Gold-green; beneath grey, with white belly; a whitish stripe behind the eyes, and blue-black quill and tail-feathers. The most common species in Paraguay.

Maugeanus. Gold-green; beneath glossed with violet-blue, with violaceous-black wings and tail, the latter slightly forked. Maugean humming-bird, or Tobago humming-bird of Latham. Native of the island of Porto-Rico, whence it was brought by M. Mauge.

Ruber. Sub-ferruginous; slightly spotted with brown, with the side-feathers of the tail violet-brown. The little brown humming-bird of Latham. Brought from Surinam.

Cristatus. Gold-green, cinereous beneath; with golden-blue pointed crest, and violet quill-feathers and tail. The crested green humming-bird of Edwards and Latham. The female differs in wanting the crest, and in being ash-coloured beneath. Native of South America, and some of the West India islands.

Pileatus. Brown, with glossy-blue pointed crest. The T. puni-
T. puniceus of Linnaeus, Gmel., and crested brown humming-bird of Latham.

**minimus.** Gold-green; measuring about an inch and half in length; beneath whitish, with violet-brown wings and tail. Leafy humming-bird of Edwards and Shaw, &c. The smallest of the genus, and consequently of the whole feathered tribe: its general length being somewhat more than an inch and a quarter. Shaw’s General Zoology, vol. viii.

**striatus.** Brown; beneath white, with a longitudinal flria or streak green-gold; brown cap; black quill-feathers; base of the tail cinnamon-coloured, tip obscure. The brown-crowned humming-bird of Latham. Found in the island of Tobago.

**oscurus.** Blue; crown obscure; chin and throat glossy-green; middle of the back greenish; rump, wings, and tail purple. The dusky-crowned humming-bird of Latham.

**cyanoperculus.** Green-gold, with head, tail-feathers, and crown blue; abdomen red. Found in Chili.

**glaucopus.** Green-gold, with blue front; white vent; violet-brown tail-feathers; penated feet; tail fleck-blue sub-fuscated. The blue-fronted humming-bird of Latham. Found in Brazil.

**cyanomelas.** Variegated with white and blue; throat and breast red. Black and blue humming-bird of Bancroft and Latham. Found in Terra Firme and the Caribbee islands.

**guianensis.** Green, with crest and breast red; quill-feathers and tail-feathers green, variegated with red and purple. Guiana humming-bird of Latham.

**fimbriatus.** See **mellivorus**.

**longicaudus.** See **platus.**

**campylopterus.** See **latipennis**.

**niger.** See **vielloti**.

**leucogaster.** See **pegasus**.

**bicolor.** See **samarago-sapphirinus**.

**viridissimus.** See **melliscus**.

**rufus.** See **collaris**.

**punicus.** See **pileatus**.

**tobaci.** See **maegeanus**.

**elatus.** See **moschatus**.

**trochilus** is also a name used by Aristotle, Pliny, and others of the ancient naturalists, for the *regulus cristatus*, or, as we call it, the golden-crowned wren.

**trochilus** is also the name of a remarkable water-bird, being very long-legged, yet web-footed.

It is a very swift runner on the ground, and is thence called by the Spaniards *coriza*. Its beak is straight and black at the end, and the opening of its mouth very wide; it has black eyes surrounded by a white naked membrane, and that by a brown one. On its under part it is white; its back, shoulders, and wings, are of a ferruginous colour; its running is so very swift, as to equal the flight of most birds. Aldrovand, de Avib. lib. xix. c. 35.

**trochich.** The small branches on the top of a deer’s head.

**trochitæ, or trochites, in Natural History, a kind of figured fossil stones, resembling parts of plants; vulgarly called St. Cuthbert’s beads.**

They are usually of an opaque, brownish colour: they break like spar, glossy and shining, and are easily dissolved in vinegar. Their figure is generally cylindrical, sometimes a little tapering, the circumference smooth, and both the flat sides covered with fine radii drawn from a certain hole in the middle to the circumference.

Two or three, or more, of the simple trochites, joined together, constitute what the naturalists call an *entrochus*.

In these the trochites, or single joints, are so set together, that the rays of the one enter into furrows in the other, as in the futures of the skull. They are found in great plenty in the bodies of the rocks at Braughton and Stock, two villages in Craven, at all depths under ground; also in Mendip-hills, &c. sometimes only sprinkled here and there, and sometimes in large strata, or, beds, of all magnitudes, from the size of the smallest pin, to two inches about.

They are often found round or branchy, several rudiments of large branches arising from the stem, or cylinder, and sometimes still smaller from these. The branches being deeply inserted into the stem, the tearing them off leaves great holes in them. See Entrochus Ramusus.

Dr. Liferay has discovered a sort of little fragment among them, which he takes to have been the apices of them; and another sort, which he imagines to have been the roots: for he supposes them to be a sort of rock-plants.

M. Beaumont, in the Philosophical Transactions, assures us, that he has found, that all the cliffs in some mines are made up of these entrochi, some of which have been converted into a reddish matter; while others, becoming white spar, compoze bodies of that substance: and considering that all the cliffs, for a very large circumference in some places, consist almost wholly of these stones, it has been thought by some, who supposse them plants, that there have been, and still are, whole fields or forests of these under ground, as there are of coral in the Red sea. In the courses between the cliffs are found of these fossils, at all stages and degrees of maturity, growing up in the gritty clay, and rooted in the rake-mold stones, many of them of the form and dimensions of a tobacco-pipe, with the evident beginnings of circles and futures; and others full-grown, formed of perfect spar, and at their point of maturity.

The central matter, in many, continues still white and soft, as the whole substance is, by some, thought to have been at first; and is continually refreathed by the mineral streams and moifture, which have free access to it through five hollow slots, or feet, in the figured roots, or through the mafs of clay usually lying under the plain roots.

From the curiosity of their make, and from this accidental resemblance of plants, many have thought them to be such; and affirm, that they may vie with most of the vegetable kingdom, and are shaped and formed like them; having stem, branches, roots, an inward pith, as likewise joints and runnings in their grit, and sometimes cells to supply the place of veins and fibres.

Others have thought it highly probable, these rock-plants are lapides sui generis, and not parts of animals or plants petrifled, as many authors have imagined. If the figured roots, on which they sometimes grow, give any sufficience they might have belonged to an animal, particularly a species of the *Bella arboreus*, the trunks seem to them to evince the contrary: nor are they reducible to any known species of vegetables. M. Beaumont tells us, that he had by him above twenty different species of trochites, all of them wonderfully regular, and not to be paralleled by any vegetable he knows of in nature; and it is inconceivable how to many species, diffused through many parts of the earth, should come to be lost. They are certainly, indeed, not vegetable remains, but are truly parts of the *Bella arboreus* petrifled. See farther, Keppellus Effai de Entroch. and the articles Entrochus, Star-fish, and Star-fone.

**trochitifer glans.** See Glans Trochitifera.
TROCHLEA, προξελα, one of the mechanical powers, usually called a pulley; which see. TROCHLEA, in Anatomy, a name given to some articular emanations of bones, which resemble in form the groove of a pulley; viz. that of the humerus, adapted to the ulna. TROCHLEARIUS, a muscle of the eye. See EYE. TROCHMI, in Ancient Geography, the name of one of the three Gaulish nations, which, according to Strabo, established themselves in that part of Galatia which respects the Euxine sea, and that which touches on Cappadocia. TROCHOSCARPA, in Botany, from τροχος, a wheel, and ΚΣΟΤΟ, fruit, serving to express the orbicular depressed form of the nut, like a little wooded wheel.—Brown Prodr. Nov. Holl. v. i. 548.—Cf. and order Perastria Monogynia. Nat. Ord. Epacridae, Brown. Gen. Ch. Cal. Periathan inferior, of five equal, erect, ovate leaves, with two smaller ones, of the same shape, at the base, permanent. Cor. of one petal, funnel-shaped; tube cylindrical, more or less than the calyx; limb in five deep, ovate, spreading segments, bearded on the upper side. Neotaxy cup-shaped, five-lobed, surrounding the base of the seed. Stam. Filaments five, thread-shaped, the length of the tube, inserted into its lower part; anthers oblong, incumbent, included within the tube. Pfl. German inferior, ovate; style very short; stigma simple. Peris. Drupa globosha, depressed, juicy. Seed. Nut orbicular, with ten lobes, finally separating into as many distinct cells, with a kernel in each. Eff. Ch. Outer calyx of two scales. Corolla funnel-shaped, with a pervious naked tube, and a five-eleft, spreading, bearded limb. Stamens within the tube. Drupa pulpy. Nut wheel-shaped, ten-lobed, ten-celled. 1. T. laurina. Laurel-leaved Trochoscarpa. Br. n. l. (Cyathodes laurina; Rudge 77. of Linn. Soc. v. 8. 293. t. 9.)—Found near Port Jackson, New South Wales. A small tree, smooth in every part, with very hard wood. Leaves scattered, on short flanks, elliptic-lanceolate, acute, entire, many-ribbed, with somewhat of the aspect of a Rhus, each near two inches long. Spikes rather lax, terminal and axillary, shorter than the leaves. Flowers white, small. Fruit less than a pea. TROCHOID, τροχοειδς, or Trochoides, formed from τροχος, a wheel, and οιον, form, in Geometry, a curve, whose generis may be thus conceived: if a wheel or circle be moved with a two-fold motion at the same time, the one in the right line, and the other circularly about its centre, and these two motions be equal, i.e. describe two equal lines in the same time: and if in the radius, which at the beginning of the motion reaches from the centre of the wheel, or the first point of the line which describes the circumference: if, I say, in this radius, a point be taken any where, except in the centre, this point will describe a curve, one part of which will be below the line described by the centre, and the other above it. This line, thus described by the point taken in the radius, is called the trochoid. The right line which joins the two extremities of the trochoid, and which is either the path the wheel makes, or a line parallel to that path, is called the base of the trochoid. The axis of the trochoid is the diameter of the wheel, perpendicular to the base in the middle of the motion; or that part of the radius between the trochoid and its base. The point, in which the axis is cut into two parts by the line described by the centre of the wheel, is called the centre of the trochoid; the uppermost point of the axis the vertex of the trochoid; and the plane comprehended between the trochoid and its base, the trochoidal space. The trochoid is the name with what we otherwise call the cycloid; for the properties, &c. of which, see Cycloid. TROCHOIDES LACUS, or Trochoid Lake, in Ancient Geography, a lake in the isle of Delos. It was on the borders of this lake, that, according to the mythologists, Latona was brought to bed of Apollo and Diana; and here the first of these deities had a temple. TROCHTELFINGEN, in Geography, a town of Wurtemberg, lately imperial; 16 miles N.W. of Buchau. N. lat. 48° 16'. E. long. 9° 18'.—Also, a town of Germany, in the county of Oettingen, on the Eger; 4 miles S.W. of Nordlingen. TROCHUS, in Antiquity, denotes the exercise or game of the hoop. The hoop was of iron, five or six feet in diameter, set on the inside with a number of iron rings. The boys and young men used to whirl this along, as our children do their hoops, directing it with a rod of iron, having a wooden handle: which rod the Grecians called σφεις, and the Romans radius. The clattering of the ring served partly to the diversion, and partly as a notice for pedlans to keep out of the way. Horace de Art. Poët. ranks this exercise among other manly sports: "Ludere qui necit, campdfribus ablinet armis, Indocutile, pile, dilicie, trochive quicfet." TROCHUS, in Natural History, the name given by authors to a genus of shells: some of the species of which resemble the figure of the trochus, or top, which boys play with. As there are many species of this shell, however, which are flattened and have nothing of this form, the whole series of them are much better named, by a denomination taken from the shape of the mouth, which is of an oval figure, and is alike in all these species, and different from all other shells. They are therefore aptly characterized by a late French writer under the name of cochlea oro depriffo. The trochus, or tops, form the fifteenth family of shells in Da Costa's arrangement; and he defines them to be shells of a conic or pyramidal shape, the top being broad and flat-tish, and gradually tapering thence to a very sharp point; the aperture or mouth is most generally angular, low, and narrow. This is a numerous family, and abounds with curious and fine shells. See Trochus, under Conchology. There is a fossil species of trochus, not yet discovered recent. It is a large kind, flat-tish, and like a cochlea helix, generally about two inches in diameter, much wrinkled, with sharp prominent edges like plates, which are spiked at regular distances, running across the spires; and the whole shell is likewise iridated. This trochus is found in the limestone of Coalbrook-dale in Shropshire, and Dudley in Staffordshire. TROCKENBERG, in Geography, a town of the duchy of Stitia; 4 miles N.N.W. of Rein. TROCOT, a small island in the East Indian sea, near the coast of Queda. N. lat. 6° 30'. E. long. 99° 33'. TROCTUS, in Ichthyology, a name given by Arickote, Alani, Athenæus, and others of the Greek writers, to the fish called amia by Pliny, and moll other of the later, as well as ancient Latin writers; but by some, lebœia and glaueus. It is properly a species of the stomor; which see. TROCZENIECZ, in Geography, a town of Poland, in the palatinate of Braslaw; 20 miles S. of Braslaw. TRODEN, a town of Germany, in the principality of Querfur; 8 miles S.E. of Juterbock. TRODENA,
TRODEN^, a town of the county of Tyrol; 16 miles
S.S.E. of Bolzano.

TREZEN, or TREZEN, Danala, in Ancient Geography,
a town situated towards the S.E. extremity of the peninsula
of the Argolidse, at a small distance from the sea, and at
the junction of the two rivers, the Charybdis and the
Hydrcus. This town took its name from a hero, the son
of Pelops, and the brother of Pitheus. The last reigned
there, and was admired for his virtues and the mildness of
his government. The veneration which his conduct had ex-
cited, remained to the time of Paulinas.

Trezzen abounded with a variety of monuments; among
which we may reckon the tomb of Pitheus in a temple con-
structed in honour of Diausa Confervatrix by Theleus, after
his return from Crete, as an acknowledgment of his having
escaped the fury of the Minotaur; a portico ornamented
with the statues of women and children; a chapel confe-
crated to the Muses, and a great number of temples. The
habitants of Halicarnassus, in Caria, regarded Trezen
as their capital. A great part of the territory of Trezen
was an illusim extending into the sea, and as far as Her-
mone to the W. The port lay N. of the town, and was
called "Pogonis portus."1

TREZEN, a town of the Peloponnesus, in the interior
of Messenia. Ptolomy.

TROZENE, a town of A尹a Minor, in Caria.
Strabo.

TROGEN, in Geography, a town of Switzerland, and
chief place of the Protestant part of the canton of Appen-
zell, celebrated for its manufacture of cloth. Near it is
a mineral spring, containing copper, sulphur, and alum,
used externally for several complaints; 7 miles S.E. of
St. Gall. N. lat. 47° 14'. E. long. 9° 33'.

TROGILUM, in Ancient Geography, a promontory
of A尹a Minor, in Ionia, W.S.W. of mount Mycale, and
S.S.E. of the promontory Podium.

TROGILUS, a country of Macedonia. Steph. Byz.

TROGLODITAE, formed of TEnggd, caverns, and
by G, I enter, a people of Ethiopia, said to have
lived in caves under ground.

Pomp. Mela gives a strange account of the Troglo-
dytes.

—He says, they did not go properly speak or shriek; and
that they lived on serpents, &c. Tzetzes calls them Itbby-
ophagi. Mountanus takes them to be the same with thole
called in Scripture Ghananim. Pintianus in Strabo will
have the name written without the I, Trogodite.

These Trogloodytes, so called by the Greeks from their
primeval habitats in natural caverns, or in mountains
excavated by their own labour, were probably, as sir
William Jones conjectures (Works, vol. iii. p. 166, 8vo.)
the first inhabitants of Africa, where they became in time
the builders of magnificent cities, the founders of oneiarias
for the advancement of science and philosophy, and the in-
ventors (if they were not rather the importers) of symboli-
ical characters. Upon the whole he concludes, that the Ethiopians
of Meroe were the same people with the first Egyptians,
and hence likewise, as might be easily flown, with the
original Hindoos. We have already, aided by the conjectures
and historical details of the learned Bryant, and of the indef-
attagible traveller Bruce, traced the probable origin of these
people under the article CUSH. Having accompanied the
Cushites or Cushites in their migrations to Abyssinia, and
suggested the reason of their forming excavations in the
mountains and rocks for their habitats, we shall now at-
tend them in their peregrinations towards the south. Be-
sides other arts, with which they seem to have been
acquainted, they employed themselves in astronomical ob-
servations; and accordingly wished to difengage themselves
from the tropical rains and cloudy skies, that hindered their
correspondent observations with their countrymen, defecled
from the fame aneclors, who had ellablifhed themselves
at Meroe and Thebes. But upon advancing within the
southern tropic, they still found rains; and, therefore, con-
structed houses, such as the fears of a deluge had induced
them to prepare. They found solid and high mountains in
a fine climate; but, more fortunate than their countrymen
to the northward, they found gold and silver in large quan-
tities, which determined their occupation, and constituted
the riches and confluence of their country. In these
mountains, called the "mountains of Sofala," large quan-
tities of both metals were discovered in their pure and un-
mixed state, lying in globules without alloy, or any necel-
licity of preparation or separation. The balance of trade, fo long
against the Arabian and African continents, turned now in
their favour, from the immense influx of these precious
metals, found in the mountains of Sofala, jilt on the verge
of the southern tropical rains. The northern colonies ad-
vanced gradually from Meroe to Thebes, intent upon the
improvement of architecture and building of towns, which
they began to substitute for the caves which they and their
ancestors, the Cushites, originally occupied; and they thus
became traders, farmers, artificers in various branches, and
even practical astronomers, from having a meridian night
and day free from clouds, for such was that of the Thebaïd.
As their brethren, who still inhabited the mountains, did not
enjoy similar advantages, being confined by six months'
continued rain to their caves, we may naturally imagine
that their sedentary life would render them useful in re-
ducing to practical purposes the observations daily made by
those of their countrymen who lived under a purer sky.
Letters too, or at least one fort of them, and arithmetical
characters, as we are informed, were invented by this middle
portion of the Cushites; while trade and astronomy,
the natural history of the winds and feaons, were employing
that part of the colony which was established at Sofala,
more to the southward. The very nature of the commerce
of the Cushites, the collecting of gold, the gathering and
preparing of spices, necessarily fixed them permanently
at home: but his profit depended on the disperion of these
spices through the continent, otherwise his mines, and the
trade produced by the possession of them, would be of little
avail. A carrier was necessary for the disperion of their
dispensable commodities; and such they found in their own
vicinity. These carriers were denominated Berbers or
Shepherds, as well as distinguished by other appellation
of similar import. These shepherds of the Thebaïd and
Ethiopia were wholly employed in the disperion of the
Arabian and African goods all over the continent; and
they rose to be a great people. As that trade increa-
ed, their cattle multiplied, and consequently they increased
in number, and the extent of their territory was enlarged.
Nothing was more opposite than the manners and life of the
Cushite, and his carrier the shepherd. The first, although
he had forsaken his caves, and now lived in cities which he
had built, was necessarily confined at home by his commerce,
amassing gold, arranging the invoices of his spices, hunting
in the seaon to provide himself with ivory and with food
through the winter. The mountains, and the cities he after-
wards built, were situated upon a loamy, black earth, so
that as soon as the tropical rains began to fall, he was de-
prived of his cattle, by swarms of flies (fice ZIMB) which
appeared wherever that loamy earth was; which made him
S1 absolutely
absolutely dependent upon the shepherd, who was himself also affected by this circumstance. The shepherd, as a carrier, was enabled to perform his long and toilsome journeys across Africa by the means of the camel, emphatically called by the Arabs "the ship of the desert." When Carthage was built, the carriage of this commercial city fell into the hands of the Lebhim, or Lubim, the Libyan peacants, and became a great accession to the trade, power, and number of the shepherds. For a further account of the shepherds, see Shepherds of Egypt.

As the Abyssinians of the Arabian flock had no symbols of their own to represent articulate sounds, they borrowed those of the Troglodytes above mentioned; and to them we may with probability trace the origin of the Abyssinian written language, or the Ethiopic, which is a dialect of old Chaldæan, and a filter of Arabic and Hebrew; and many improvements in science and the arts, as well as in commerce, at an early period, were introduced into Africa, and through Abyssinia and Ethiopia into Egypt, by these people. It has indeed been suggested that the Gypsies (see the article) were Troglodytes from the rocks near Thebes, where a race of banditti still resemble them in their habits and features; but it seems more probable that the Gypsies, whom the Italians call Zingaro and Zinganos, were no other than Zinganians, who might, in some piratical expedition, have landed on the coast of Arabia or Africa, where they might have rambled to Egypt, and at length have migrated, or been driven into Europe.

Troglodytes is also an appellation given to a feclt of Jewish idolaters.

The prophet Ezekiel relates, chap. viii. ver. 8, 9, 10, &c. that God, among other abominations of the Israelites, which he set before him, sentenced him seventy old men, who, with their centers in their hands, adored secretly all kinds of animals and reptiles painted on the wall.

Philastrians, on this vision of the prophet, erect these idolaters into a feclt of Israelites, who, hiding themselves under ground, and in caves, adored all kinds of idols.

And yet the prophet plainly shews, that it was in secret parts of their houses, and not in subterraneous caverns, that these seventy Israelites idolatized. The name Troglodytes, then, is feigned; and so probably is the feclt.

Troglodytes, in Ornithology. See Wren.

Trogodos, Trobodos, or Trebos, in Geography, a name given by the Greeks of the present day to mount Olympus, which divides the island of Cyprus longitudinally. In order to distinguish it from another mountain of the same name in Natalia, and from another more famous in Macedonia, the ancients gave this the name of "Little Olympus." On its summit they had built a temple dedicated to Venus, the entrance of which, by a regulation very strange for a spot consecrated to the goddesses of Love, was prohibited to women: they were even forbidden to look at it. To this temple, an elegant and faced reeves, where were celebrated the enjoyments of nature, had succeeded retreats erected for privations. Numbers of convents were built on the same ground. There, laborious Cenobites embellished the steep of the mountain with gardens, and plantations of all sorts, laid out with taste. This was the most charming abode in the island; and the rich Cypriots went thither, during the summer, to enjoy the coolness of agreeable groves, watered by limpid streams, directed with considerable art. Ineffable to a happy harmony of nature and industry, the Turk has carried his ferocity and ravages into this beautiful district: the monasteries have been demolished, and cool and cheerful spots have been clothed with the rugged garb of ITERITY. Somnini.

Trogon, CURUCAI, in Ornithology, a genus of the Pica; the characters of which are, that the bill is shorter than the head, cultrated, hooked, and serrated at the margin of the mandibles; the nostrils are covered with bristles; and the feet, short, timple, covered with down, are formed for climbing, having two toes forward, and two backward.

The birds of this genus are mostly inhabitants of South America: they feed on fruits, and all agree in their general habits of life. In Guiana they are denominated Cozrocuoos, or Curucui, from their notes being very much like that word.

Species.

Strigilatus. Cinereous, with a fulvous abdomen; wings frizzled with white; tail-feathers black, the three lateral ones outwardly banded and tipped with white. The cinereous curucui of Latham. Inhabitats Cayenne and Guiana.

Curucui. Golden-green; of a fulvous red beneath; throat black; wing-coverts and the three exterior tail-feathers white, striped with black. Red-bellied curucui of Latham. Of this species there are several varieties, viz. one mentioned by Marchgrave, which had the wing-coverts plain brown, the bill ah-coloured, irides fawn-coloured, and without the bare spot under the eye mentioned by Brifon in his description; another, with a yellow abdomen; the green yellow-bellied curuco of Edwards; another, described and figured by Buffon, of a cinereous-grey, with very flight traces of green-gold, especially on the back and middle tail-feathers; the lower part of the belly and the vent only being red; the tail very long, having the outer web of the three lateral feathers and the tips plain white; the three outer quills are also marked with black and white on the exterior webs. This species is a very solitary bird, being found only in the thickest forests; and in pairing time never more than two are found together, when the male has a very melancholy note, never uttered except whilst the female is sitting. They pair in April, and lay three or four white eggs. The male, during the incubation of the female, supplies her with food, and by his song helps to pass away the time. The young, when first hatched, are altogether without feathers, and are fed by the old birds with small worms, caterpillars, and insects; but are deferred by them, when they are able to shift for themselves; and the parent-birds return to their solitary haunts, till August or September, when they are prompted to produce another brood. At St. Domingo and in other islands these birds are called "Demoiselle," or "Dame Angloise," where attempts have been made to tame them, but ineffectually, as they refuse to eat, and consequently die. They are also found in Cayenne, Peru, Brazil, and Mexico.

Viridis. Golden-green; beneath yellow; throat black; with the three lateral feathers on both sides obliquely destitute of white. The yellow-bellied curucui of Latham. Of this species there is a variety, viz. the lefs, with white abdomen; the white-bellied curucui of Latham. This species inhabits Cayenne.

Rufus. Rufous, with the body beneath yellow; wings frizzled with black and grey; the three lateral tail-feathers frizzled with black and white, with white tips. The rufous curucui of Latham. Found in Cayenne.

Violaceus. Violet-coloured, with a green back; wing-coverts and secondaries quills spotted with white; the three lateral tail-feathers barred with black and white, with white tips.
The violet-headed curucu of Latham. Found in Cayenne.

Maculatus. Striped with dusty and brown; crown green; wing-coverts and secondary quill-feathers green, white at the tips; tail dusky, with white bars. Spot at curucu of Latham; inhabiting Ceylon.

Fasciatus. With a ferruginous back; body beneath fulvous red; head and neck dusky, with a white face on the breast; wings fuscated with black and white; apex of the tail black. Fuscated curucu of Latham; inhabiting Ceylon, but rare, and called by the inhabitants "Rautvankonda-cuckoo".

Asiaticus. Green, with the forehead, crown, and hind part of the neck red; throat blue, with a red spot; quills and tail-feathers black. Blue-cheeked curucu of Latham; inhabiting India.

Indicus. Dusky, with ferrugineous spots above; beneath yellowish, striped with dusky; head black, with white stripes; tail very long, and barred. Indian curucu of Latham; called in India by the natives "Bungummi".

Narina. Above green, with a red belly. Male, with the head, neck, back, throat, jugulum, breast, and wing-coverts green, which last are greyish behind; quills black, bordered externally with white. Female, with the throat, jugulum, and wing-coverts brown; abdomens in front cinerascents. Le Vaillant says, that this bird is an inhabitant of Caffaria, and the country of Auteniqua to the river Gantoo, and that the name Narina, in the Hottentot language, signifies a flower. The female lays four nearly round eggs, and during her incubation the male has a melancholy note, but at other times he is silent.

Trogus Pompeius, in Biography, a Latin historian, flourished in the time of Augustus, and wrote 44 books, under the title of "Philippicis," so called from their subject, which was the Macedonian empire, originating with Philip, the father of Alexander. An epitome of this work by Julius is extant. Julius denominates Trogus a man of antique eloquence, and Pliny, who often refers to him in his Natural History, distinguishes him by the appellation of "feverifimus auctoris," as a most exact author.

TROIA, or Trojan Games, Ludi Trojanii, were games instituted by Ascanius, son of Æneas; and which afterwards passed to the Romans, and were celebrated in the Circus by the youth of Rome.

One of the number, who presided over the solemnity, was called princeps juvenatis; and was always of one of the six families in Rome.

At first, it is supposed, they only engaged on foot, and on horseback; because Virgil, who describes these games in the Æneid, lib. v. only speaks of horse and cavaliers, without any mention of biga or quadriga, which were not in use in Rome till long after Ascanius. And yet Dion, speaking of Cæsar's games, says, the youth there combated in chariots; but it is thought by some, that these were not the Trojan games, but races and combats of a different kind, proper for young people, of a more advanced age.

The Trojan games were renewed by Augustus, after the victory at Actium, A.D. 726; began to decline under Tiberius, and terminated under Claudius.

TROIA, in Ancient Geography, a town of Chonisia, in Cilicia. Steph. Byz.—Allo, a town or rather village of Egypt, in the vicinity of mount Troicus. This was the ancient habitation of the Trojans, who followed Memelus to his captivity. Strabo.—Allo, a town of Italy, at the bottom of the Adriatic gulf, in the country of the Veneti. Steph. Byz.—Allo, a town of Asia, in Cilicia.—Allo, a place of Italy, in the territory of the town of Larentum. According to Livy, it gave name to the place where Æneas landed, on his arrival in Italy; situated, according to Dion. Halic., four stadia from the sea.

TROJA, or Troy, a celebrated city of Asia Minor, and capital of the small country called Troas, or Tronde (which see), and Phrygia Minor, situated to the north-west. See PHRYGIA Minor.

TROJA, in Geography, a city of Naples, in Capitanata, on the river Chilar, the seat of a bishop, containing six churches and six convents. It was built on an eminence, out of the ruins of Æneas, a city destroyed by Conflans II. It is said to have been founded by Bajianus, catapar or viceroys of the province in the eleventh century, by order of the emperors Basil and Constantine, as a bulwark against the inroads of the Norman adventurers, and to have had its name in commemoration of the famous city, which, by its fall, immortalized the heroes of Greece. It was long accounted a key to the Apennines, and as such was exposed to many assaults and sieges; 33 miles S.W. of Manfredonia. N. lat. 41° 24'. E. long. 15° 18'.

TROIA, a small island in the Mediterranean, near the coast of Italy. N. lat. 42° 43'. E. long. 11° 5'.

TROJAN, a town of Servia; 16 miles S. of Sabaceq. TROIL, among Tinners, denotes a feath., or occasion of merriment, by eating and drinking; called also a duggle. TROILINSAKAIA, in Geography, a town of Ruffia, in the country of the Caffacks, on the Don; 80 miles E. of Azoph.

TROIS-CINQUE, in the French Distillation, a term used to express their brandy, when of a peculiar strength, consisting of five parts alcohol and three parts phlegm.

The method of distilling the wines into brandy in France, is exactly the same with that used with us to draw the spirit from our wine or fermented liquor of malt, treacle, sugar, or whatever other kind. They only observe more particularly to throw a little of the natural lee into the still along with the wine; and the poorest wines are sure to succeed best on the trial, making by much the finest brandies. We are apt to wonder that we cannot, from the wines of particular countries, distil their particular brandies; but the whole mystery consists in this, that they do not send us over the same wines which they use in distilling, because these latter would not be liked as wines, nor would keep in the bringing over. Sometimes in Scotland they meet with the poor and pricked wines, the fame that the French distil their brandies from; and from these they distil a spirit, not to be known from the brandy distilled in France.

The lea which the French add in the distillation gives the brandy that high flavour for which we so much esteem it; but they themselves like it so much the worse for it. The French notion of a proof strength, determined by the chaplet or crown of bubbles, is the fame with ours; and all their fine spirits are found of this strength.

But they have one particular expedient for those brandies which prove foul and feedy, or retain the taste of certain weeds which grow among the wines; they draw them over again, with a design to free them from that adventitious flavour. In this operation they always leave out the faints, or rather they change the receiver as soon as ever the stream comes proof; then mixing together all that ran off before, they make a brandy stronger than the ordinary kind, and this is what they call trois-cinque.

The distillers in France scarcely ever bring their brandies higher than this; for they have the art to persuade the foreign merchant, that the phlegm of French brandy is so natural...
natural and essential to it: but the truth is, that the spirit alone contains the flavour and excellence of the brandy, and it might as well be reduced to half its bulk for exportation, and fent over in the state of alcohol, and then lowered with common water to the proof strength.

The French use no art in colouring their troisi-cinque, any more than their common proof-brandy, nor do they add any thing to give them an additional flavour; the thing which they principally value themselves upon, both in regard to brandies and wines, being to make them perfectly natural: so that all the colour we find in their brandies, is acquired from the cask, and the time they are left in it. This is often twelve or eighteen months, sometimes two or three years; in this time they acquire a brown colour, and lose their acid taste.

The greatest adulteration of brandies is in England: the French have no temptation to do it, they having no cheaper spirit, since the prohibition of molasses in their country. The Dutch are in the same condition, having no molasses-spirit, and only a very coarse and nauseous sugar-spirit, and a yet worse malt-spirit of their own manufacture; a single gallon of which would spoil a whole piece of brandy. The French brandy also paying no duty in Holland, is as cheap, or nearly so there as in France itself. The duties being high upon brandy in England, it is greatly adulterated, and that with all sorts of spirits; as malt, molasses, cider, and sugar spirits; and when this is done in a dexterous and spurious manner, the cheat is not easily detected. Shaw's Essay on Distillery.

TROIS MARIES, Let, in Geography, a town of France, in the department of the Mouths of the Rhône, by the inhabitants of the country held a sacred place, as having been, according to tradition, the residence of the three Maries, and Lazarus after our Saviour's crucifixion; 15 miles S. of Arles.

TROIS RIVIÈRES, Let, a town of the island of Martinico. TROIS RIVIÈRES, a town of Canada, on the river St. Lawrence, lying nearly midway between Quebec and Montreal, and so called from three rivers, into which the river St. Maurice is divided by two islands, whole streams unite about a quarter of a mile below the town, and afterwards fall into the great river of St. Lawrence. It was formerly the capital of the French government in New France, and much reforted to by several nations which come down those rivers to it, and trade in various sorts of furs. The town contains about 270 or 300 houses, and ranks as the third town, in respect of size, in the provinces. It is one of the most populous settlements in the country, and its founder, it is said, calculated upon its becoming in a short time a city of great extent. It has hitherto, however, increased but very slowly in size, nor can it be expected to improve much, at least until the country bordering upon the river St. Maurice becomes settled. The bank of iron-ore in its vicinity, which promised opulence, is nearly exhausted. The fur-trade also, from which great benefit was expected, is now almost wholly transferred to Quebec and Montreal; and it is merely the small quantity of furs brought down the St. Maurice, and some of the northern rivers that fall into the St. Lawrence, nearer to the town of Trois Rivières than to Quebec or Montreal, that is shipped there. These furs are laden on board the Montreal ships, which float opposite to the town as they go down the river. The streets of Trois Rivières are narrow, and the houses in general small and indifferent, many of them being built of wood. In the town are two churches, an English Episcopal, and a large Roman Catholic parish-church, formerly served by the Recollets, or Franciscan friars, but the order is now extinct in Trois Rivières. The old monastery of the order is defunct, and the houses near it lie uninhabited. The college or monastery of the Jésuits, a large old stone-building in the same neighbourhood, has been converted into a gaol. The only religious order at present existing in the town is that of St. Ursula, the friary of which is as numerous as the convent can well allow. This was founded by M. de St. Vallier, bishop of Quebec, in the year 1677; the building is spacious, and situated near that formerly belonging to the Recollets; and annexed to it under the same roof is an hospital, attended by the nuns, and containing about twelve or fourteen beds, for the convenience of patients, who are well accommodated. The filters of this convent are particularly distinguished for their curious work made of the bark of the birch-tree, and of which they manufacture pocket-books, work-baskets, dressing-boxes, &c. which they embroider with elk-hair, dyed of the most brilliant colours. They also make models of the Indian canoes, and various warlike implements used by the Indians. Almost all the birch-bark canoes in use on the St. Lawrence and Utawa rivers, and on the nearer lakes, are manufactured in Trois Rivières, and its vicinity, by Indians. These canoes are constructed very neatly, and on the water they appear very beautiful. The canoes are so light, that two men can easily carry on their shoulders one that is capable of containing six people. Their size varies, some being sufficient for only one person, and others capable of accommodating any number as far as twenty. They are navigated with paddles, and move with surprising velocity. The country in the vicinity of Trois Rivières has been represented by some French travellers as wonderfully fertile, and as one of the most agreeable parts of Canada; but, according to Mr. Weld (Travels through Lower Canada, vol. ii.) it is totally the rever. It is a level barren tract, and so sandy, that in walking along many of the streets of the town, and the roads in the neighbourhood, you sink into the land at every step above the ankles. The air also swarms with mosquitoes, indicating the low damp situation of the place; 44 miles W.S.W. of Quebec. N. lat. 46° 24'. W. long. 72° 20'.

TROIS RIVIÈRES, a bay on the E. coast of the island of St. John, in the gulf of St. Lawrence.—Alfo, a river of St. Domingo, formed by the union of three streams, and running into the sea on the N. coast of the island, near Port Paix.

TROISSEREUX, a town of France, in the department of the Oise; 4 miles N.W. of Beauvais.

TROYTZ, or TROTSKOE MONASTIR, that is, The Convent of the Holy Trinity, a convent of Russla, which is so large, as at a little distance to have the appearance of a small town; and, like many convents in this country, is strongly fortified, according to the ancient mode of defence, being surrounded with high brick walls, strengthened with battlements and towers. Beside the convent or habitation for the monks, the walls inclofe an imperial palace, and nine churches, constructed by different sovereigns. The convent is a large range of building encircling a court, and is far too spacious for the present inhabitants. It formerly contained 300 monks, together with a proportionate number of students; and was the richest ecclesiastical foundation in Russla. The fraternity possessed considerable estates, upon which were at least 100,000 peafants: these estates, as well as all the other church-lands, being now annexed to the crown, the members receive small penions. With their revenues their number has been greatly diminished, and they fearfully amount
amount of present to 100 monks. Their habit is black, with a veil of the same colour; they eat no meat, and the discipline of the order is very strict. This convent is distinguished in the annals of this country as the asylum for the Russian sovereigns, in cases of infirmary or danger; and is more particularly known to foreigners for the refuge it afforded to Peter the Great, when he put an end to the administration of his brother Sophia; 40 miles from Moscow.

TRÖTZK, a town of Russia, in the government of Penza; 76 miles W.N.W. of Penza. N. lat. 54°. E. long. 49° 32'.

TRÖTZKOE, a town of Russia, in the government of Ufa; 200 miles E. of Ufa. N. lat. 54°. E. long. 61° 44'.—Alfo, a town of Russia, in the government of Ufa; 16 miles N.E. of Sergievsk.

TRÖTZKOI, a town of Russia, in the government of Simbirsk; 20 miles N. of Sizran.—Alfo, a town of Russia, in the government of Archangel; on the Pinn; 28 miles S.E. of Pinn.—Alfo, a town of Russia, in the government of Ufa; 40 miles N.W. of Belovecz.—Alfo, a town of Russia, in the government of Tobolfsk, on the Ob; 204 miles N. of Tobolfsk. N. lat. 61° 24'. E. long. 42° 50'.—Alfo, a town of Russia, in the government of Tobolfsk; 40 miles N.W. of Narim.—Alfo, a town of Russia, in the province of Ulug; 32 miles S. of Lasf. Alfo, a town of Russia, in the government of Koltrom; 40 miles S. of Vethluga.—Alfo, a town of Russia, in the government of Koltrom; 12 miles N. of Vethluga.—Alfo, a town of Russia, in the government of Tobolfsk; 14 miles N.E. of Talievskoi.

TRÖK, or TROI, a town of Lithuania, and capital of a patinate to which it gives name. This town was built by the great duke Gedim in, the year 1321, and is situated among lakes; it was formerly the residence of the great dukes, who afterwards removed their seat to Wilna. In the year 1655, it was demolished by the Russians; 16 miles W. of Wilna. N. lat. 54° 33'. E. long. 24° 44'.

TROLHETTA, a town, or rather village, of Sweden, in West Gothland; 15 miles E.S.E. of Uddevalla. For an account of the canal of Trolhetta, see CANAL.

TROLLING, among Anglers. To troll, is to fish for pikes with a rod whose line runs on a reel. See Pike-Fishing.

TROLLUS, in Botany, a name given to this plant, our Globe-flower, by Conrad Gesner, which, though of barbarous etymology, has been universally retained. This might be attributed to respect for its illustrious author, were there not so many bad reasons for which barbarous names have been admitted. The derivation of Trolleus is laid to be from an obsolet German word tröll, or tröllen, expressing any thing globular. Hence it is synonymous with the English name of this flower; as well as with the French one, boule d'or. Professor Martyx says, after Haller, "Trolhume, in German, seems to signify a magical flower."


Gen. Ch. Cal. none. Cor. Petals about fourteen, sometimes fewer, roundish-ovate, concave, converging, diminutive, three in each outer row, five in the innermost. Neftaries about nine, linear, flat, incurved, perforated at the base within. Stam. Filaments numerous, linear, much shorter than the corolla; anthers linear, erect. P.PB. Germens superior, numerous, sessile, columnar; fyles short; fligma pointed, shorter than the flaments. Peric. Capsules numerous, collected into a head, oblong, compacted, curved, pointed, burring at the inner edge, of one cell. Seeds numerous, obovate, angular, polished, inferted along the inner edge of each valve.


Obs. Linnaeus erroneously in Gen. Pl. calls the capsules ovate and single-feeded.

1. T. europeus. European Globe-flower. Linn. Sp. Pl. 782. Willd. n. 1. Fl. Brit. n. 1. Engl. Bot. t. 28. Fl. Dan. t. 133. Lightf. Scct. 295. (Ranunculus globosus).—Geer. Em. 955. R. fexs. Camer. Epit. 385. Globe Crawfoot; Pétiv. Herb. Brit. t. 43. f. 2. —Petals closely converging. Neftaries the length of the flaments. Native of mountainous, rather moist, meadows and pastures in the north of Europe, especially Lapland, Sweden, Germany, Switzerland, Wales, the northern counties of England, and Lowlands of Scotland, flowering in May and June. The root is perennial, of many stout fyrines. Herb smooth. Stem erect, two feet high, round, leafy, branched in the upper part. Leaves deeply divided into many wedge-shaped, deeply cut and toothed, acute, spreading lobes; the radical ones on long falks; the refl nearly sessile, alternate. Flowers solitary at the naked summits of the branches, erect, globular, above an inch wide, of an elegant bright uniform yellow. Neftaries obtuse. Seeds black. Höller and Lightfoot say the flowers are fragrant, which we have not observed. The Scotch call them Lucken-gowans, or Cabbage-daifes. In Westmoreland we have seen these flowers gathered by the peafants, with great fertility, and made into garlands for the young men and women, as well as to decorate the porches of their cottages. Linnaeus mentions them as ufed in Sweden to trow the floors on holidays.

2. T. afaticus. Asiatic Globe-flower. Linn. Sp. Pl. 782. Willd. n. 2. Ait. n. 2. Curt. Mag. t. 235. (Helbor us asci folio, flore globo croceo). Ann. Ruth. 76. n. 101. —Petals spreading. Neftaries nearly equal to them in length. Native of the banks of rivers in Dauria. Annum.—A hardy, but not very common, perennial in our gardens, flowering in May or June. It requires a mixture of loam and bog earth, in a northern exposure, and must have due supplies of water in dry summers, for want of which we have, after several years successful cultivation, lost the plant. This species is very like the former in habit, though somewhat larger, with more copious and acute teeth, or serratures, to the leaves. The flowers however are distinguished by their spreading petals, of a rich orange-colour, and the full deeper hue of their large and numerous neftaries, almost, or quite, equal to the petals in length. The flower being much more open than in T. europeus, the neftaries, as well as flaments and pettis, are displayed in full view, and the whole makes a very handsome appearance.

—Petals spreading, slightly concave. Nectaries hardly so long as the flammes. —Native of Pennsylvania, flowering in May. Specimens and seeds were sent us in 1793, by the late Rev. Dr. Muhlenberg, under the above name, by which he has published the plant in his Catalogus Plantarum America Septentrionalis. This name is so singularly apt, one species of this genus being appropriated, as it appears, to each of three quarters of the world, that, though we by no means approve of specific names taken from particular countries, on a limited scale, we cannot reject this: fill less can we allent to an arbitrary change of the other two. On this subject we have the universal suffrage of botanists in our favour. The species before us is smaller than either of the other two, and seems to have scarcely more than five petals, which are obvate, and of a yellow, not orange, colour. Their spreading position sufficiently distinguishes the plant from T. europaeus, as the thornettes of the nectaries does from asfaticus. The capsules are short and abrupt, crowned by the rather elongated styles.

Mr. Donn mentions two other American species, by the names of intermedium and hybridus, which we preume to be varieties of americanus. We have observed a difference of appearance, with respect to size and colour, in plants raised from our original parcel of seeds, and Dr. Muhlenberg makes but one American species. The date of the introduction of T. americanus ought to be 1794, not 1805.

T. patulus, Salis. Tr. of Linn. Soc. v. 8. 303; Helleborus ranunculus, Sm. Plant. t. 379, is most evidently no Trollius, on account of its tubular nectaries.

Trollius, in Gardening, comprises some hardy, heraceous, flowery, perennial plants, as the globe ranunculus, or globe-flower, among which the species cultivated are the European globe-flower (T. europaeus); and the Asiatic globe-flower (T. asfaticus).

These two plants are of a rather tall hardy growth, affording considerable ornamental effect in their large flowers, which grow in the first fort in a particular converging manner, or turn in an inward direction, or somewhat revolute mode, so as to give them a perfect globular form, from which they derive the name of globe-flower. They appear in both forts in the beginning of summer. Those in the Asiatic or latter kind, however, are not connivent, but spread out and shew some of the inner parts, which are of a fine faffron-colour, and display a flanking elegant singularity in their appearance, which renders them highly valuable for their use in the flower-garden. They are both definable flower-plants.

Method of Culture.—The means of propagation and increase in these plants are occasionally by sowing the fresh seeds of them, and the parting of their roots.

In the former method, the seeds should be sown in shallow drills, in a somewhat shady border or other place, in the autumn or spring seasons, covering them to the depth of nearly half an inch, when they readily grow and produce plants for setting out in other parts.

In the latter mode, the roots should be taken up in the autumn season, when the leaves decay and fall off, or very early in the spring months, and be divided into several parts, but not by any means into too small slips, and then be planted out either where they are to remain, or in nurseries, where they are to continue for twelve months, when they will be ready to set out finally.

The seedlings should be set out in summer, or towards the autumn season, in rows about five inches asunder, where they are to continue about six or eight weeks, to become perfectly strong, and be finally planted out in the places where they are to remain.

And the root-plants, which are set out in rows, may be removed in the autumn or spring seasons to the spots where they are finally to grow and continue.

As these plants are natives of moist and shady situations, they are generally the most successfully planted in places where the circumstances are the same in this climate, though they will commonly grow very well in any border or compartment of the garden which is not over dry, or without moisture.

These plants multiply extremely fast by the roots, and are of a great many years duration.

They are highly deserving of a situation in all curious collections in the flower-gardens and pleasure-grounds, where they have a fine effect in the clumps, borders, and other compartments.

TROMBA, in Geography, a small island near the coast of Iltia. N. lat. 45° 3'. E. long. 13° 52'.

TROMBA, in the Italian Music, either denotes the common trumpet, the buccina of the ancients, or the modern facbat, but more properly our trumpet.

TROMBETAS, in Geography, a river of Brazil, which runs into the river of the Amazons at Pauxis.

TROMBETTA, in Ichthyology, a name given by the Italians to the fish commonly called foispolax by authors. See Trumpet-Fish.

TROMBETTA, in the Italian Music, a small trumpet, being the diminutive of tromba.

TROMBONE, a wind-instrument blown by the mouth, and resembling in form the military trumpet, of which it is the bafe, the name implying the great trumpet. It differs, however, from the trumpet in being divided into two branches or parts fitted to sockets, giving the performer power to lengthen and shorten the general tube at his pleasure, according to the different tones which he wishes to produce. On which account it is called in Latin, tuba ductilis. The Germans call it paufaune, and the French faquebute.

Zarlini has described this instrument under the title of trombone movibile, and the quantity and quality of the sounds is capable of producing, very exactly.

"The trombone," says he, Supplimenti Musicales, lib. iii. cap. 5. "is an instrument truly worthy of consideration, which I have seen and often heard by good performers, beginning at the lowest sound which it is capable of producing; when, being closed in all the joints, it can produce no sound less than the octave; then from the octave to the fifth; and from that can it produce a less interval than the fourth; and from the fourth to the third major, then the third minor, after which another fourth, the key-note, from which it can form a complete series of eight notes. No other sounds than these can be produced without altering, moving, and lengthening the instrument."

Pere Merfenee, in his experiments on this instrument, (Harmon. Instrum. lib. ii.) found it capable, by lengthening or shortening the lower part of the instrument, of forming a regular series of fifteen sounds, from double C in the bafe, to C on the fifth line.

The instrument is made of brans, of which there are five forts: canto, alto, tenor, bafe, and doubl-bafe. It is much used in the large churches of Germany. They can produce all the tones and semitones in gradation. The manner of writing for them is the fame as for different voices, and on the same staff of five lines.

Canto.
The double-bafe of this instrument goes a 5th lower than any other bafe. It has the finest effect in funeral proce-
sions, and in general in melancholy strains. We never hear
it with more pleasure in England than in Handel's dead
march in Saul. Its use should be rare, and its effects would
be more striking. But tromboni and double-drums are now
so frequently used at the opera, oratories, and in symphonies,
that they are become a nuisance to lovers of pure harmony
and refined tones: for, in fact, the vibrations of these in-
struments produce noise, not musical sounds.

TROMELIA, in Ancient Geography, a town of the
Peloponnesus, in Achaia Propria.

TROMNES, in Geography, a small island in the North
sea, near the coast of Lapland. N. lat. 68° 5'. E. long.
15° 26'.

TROMP, MARTIN HARBERTZON, in Biography, a
famous Dutch admiral, was born at the Brill in 1597. At
the age of eight years he was defined for the sea-service,
and was sent on board a ship bound for the East Indies.
Whilft he was very young he was taken prisoner by an
English pirate, with which he continued for two years, ac-
quainting himself with the slrattages and manevures prac-
ticed in that kind of service: and being afterwards employed
in the service of the States, he accompanied the famous
Peter Hein in his various expeditons, and being his favourite,
fought by his side when he was killed. By various gra-
dations he was advanced to the rank of admiral, and in
February 1639, he pursued a Spanish squadron, and in
an engagement off Graveline, captured and destroyed five men
of war and four frigates. In October of the same year he
engaged another Spanish fleet in the Downs, and obtained
a glorious victory, taking or destroying the greater part of
the fleet, though effected by the English. On this occa-
sion he saved the life of Oquendo, the Spanish commander,
by sending a frigate to his relief, when his own ship was
finking. His name now became famous through Europe,
and the king of France enrolled him by patent among the
French nobility. In 1652, Tromp and Blake, the English
admiral, had a rencontre in the Downs, in consequence of
which the Dutch fleet, after having sustained some los,
was obliged to retire. Having on another occasion met
with a disappointment in fulfilling his orders for attacking
Blake by reason of a storm, he was disgraced and recalled,
and De Ruyter was appointed to supercede him; but his
command was restored to him in the same year. In No-

deember he attacked Blake, commanding an inferior force, in
the Downs, and after a severe engagement, obliged him to
retire into the Thames, with the los of five ships. Tromp
with some degree of arrogance triumphed, and fixed a
broom on his top-mast, intimating vain-gloriously that he
would sweep away the English from the Channel. This
triumph, however, was of no long duration. In Febru-
ary 1653, the two powerful fleets of Holland and
England had an engagement which lasted three days; one
of which terminated in the los of eleven men of war to the
Dutch, but it is said that Tromp lost no reputation in this
action. This engagement was succeeded by another off
Nieuport, in which Tromp and De Ruyter mutually re-

cued each other from imminent peril; but the termination
of the contest was unfavourable to the Dutch, who suffered
considerable los. These two Dutch commanders made
complaints to the States of the insufficiency of their equip-
ment, and great exertions were made to supply them with
both ships and men. In July, Tromp with eighty-five ships
decreed the English fleet with ninety-four; but before they
could come to an engagement, which was prevented by a
storm, the Dutch fleet was augmented to 120 sail. On the
6th of August the containing fleets rushed to action.
The first day was indecisive: the second was unfavourable to
Tromp, who, according to his usual practice, pierced the
enemy's line, and was surrounded, being defeated by his
own squadron. Whilft he was fighting with desperate
valour, he fell by a musket-shot, as he was giving orders
on the deck; exclaiming, before he expired, "Take
courage, my lads, I have run my course with glory!"
The Dutch seamen, having lost their commander, could not
be re-animated, and a disfavour, though dearly bought,
defeat closed the day, and also the war. The remains of
Tromp were interred with funeral honours in the church at
Delft, and a magnificent mausoleum was erected to his

TROMP, CORNELIUS, the second son of the preceding,
was born at Rotterdam in 1629, and having been educated
with a view to the navy, he was appointed, at the age of
19, to the command of a ship of war against the Corsairs
on the Barbary coast. When the war broke out between
England and the United Provinces in 1665, he was one of
the admirals in the sea-fight off Solbay, when the
Dutch fleet was defeated, though by his masterly retreat
the victors were prevented from making the most of their
successes. In some subsequent engagements Tromp distin-
guished himself by his valour, though not always unblended
with temerity, and seldom with any great successes.
Complained of by De Ruyter, who was superior in command,
he was superceded; nor was he again employed till the year
1673, when the two rival admirals, being reconciled, fought
in concert and mutual assistance in the engagements with the French and English, off the Dutch coast, in June and August. After peace with England had taken place, Tromp, in 1675, visited London, and being honourably received, was made a baronet by Charles II. Having this year conducted a fleet to succour Denmark in its war with Sweden, he was invested by the king with the order of the Elephant. Upon the death of De Ruyter, in 1677, he was appointed his successor as lieutenant-admiral-general of the United Provinces. He continued, however, in the service of Denmark, and at the peace withdrew from the navy; but in 1691, when the war with France was renewed, he resumed his command. Whilst a fleet was fitting out, he was seized by a disease which terminated his life at Amsterdam, on the 29th of May, in his 62d year. His remains were deposited in the magnificent tomb of his father at Delft. Un. Hist. Moreni.

TROMPE, in the Range. See Received.

TROMPERWICK, Gulf of, in Geography, a bay of the Baltic, on the north-east coast of the island of Usedom; a dangerous road for vessels which are driven thither by the wind, or misguided by darkness. N. lat. 54° 40'. E. long. 13° 40'.

TROMSOE, an islet on the coast of Lapland, near the Storfennifs, or Great Rocky Cape; flor, in the Scandinavian dialect, signifying great, and hence probably are derived our words flor and flor-house. Here, in the latitude of 69° 38', a village has been lately founded under the protection of the Danish government, and endowed with peculiar privileges and immunities; being intended to facilitate the exchange of commodities, and to diffuse the benefits of civilization over these fequestered regions. For two whole months at Tromsø the sun never sets; and as he wheels his oblique apparent course, he skirts the northern horizon at midnight, and again attends with fiercer beams in progress of the day, the sky being, with little variation, bright and cloudless. The change of temperature is confined to a very narrow range. The great heat, on the 15th of July, was observed at 2 o'clock in the afternoon, when the thermometer rose to 61° or 62° of Fahrenheit, and the greatest cold at 1 o'clock in the morning, when the thermometer stood at 50° or 52°. This low islet is covered with birches, though the prospect is saddened by patches of snow lying still unmelting in the streets, the gardens, and the fields. Von Buch's Travels in Norway and Lapland.

TRONAGE, TRONIUM, an ancient cemetry, or toll, paid for the weighing of wool.

The word comes from trona, an old name for a beam used in weighing.

TRONATOR, an officer of the city of London, whose business it was to weigh the wool brought into that city.

TRONCHIN, THEODORE, in Biography, a celebrated physician, was born at Geneva in 1750, and being disappointed in his expectations from Lord Bolingbroke when he visited in England, he repaired to Leyden in order to study under Boerhaave, whose Elements of Chemistry he had perused; and after passing through a course of medical instruction, he graduated M. D. in 1750, publishing on the occasion a dissertation "De Nymphae," patronized by Boerhaave. He settled at Amsterdam, and became a member of the college of physicians and an inspector of hospitals. Here he distinguished himself as a zealous promoter of inoculation. In 1754 he returned to Geneva, and ranked among the most distinguished practitioners in Europe, not only on account of his established reputation, but from the number and quality of his patients. His native city erected in his favour a chair of medicine, and the Society of Physicians admitted him into their body. He was employed by the duke of Orleans in the inoculation of his children, and by other personages of rank at Paris; and in 1763 he went to Parma, for the purpose of inoculating the family of the duke. Although he declined to comply with the invitation of the empress of Russia to spend two years at Petersburg, he accepted, in 1766, the offer of being principal physician to the duke of Orleans. His practice was simple, administering few medicines, and relying chiefly on diet and regimen, with the regulation of the passions and affections. In nervous complaints abounding in a luxurious capital, he recommended temperance and exercise. With the practice of inoculation, he patronized the cool treatment in the natural small-pox, and also the free admission of air in other diseases. On mothers he urged the stringency of their children. In the exercise of his profession he was exemplary for his humanity and charity. In conversation he was mild and modest, and in his manners agreeable and polite. He had little time for writing; but besides his inaugural dissertation already mentioned, he published a treatise "De Colica Pictonum," in 1757, and he contributed several articles to the "Encyclopædia," and to the "Memoirs of the Academy of Surgery." Of the works of Bailly, he gave an edition in 1762, with a preface on the state of medicine. He had the honour of being enrolled as a member of the chief medical and scientific societies in Europe. He died in Paris in 1781, in the 73d year of his age. Nouv. Dict. Hist. Gen. Biog.

TRONCO, in the Italian Music, the French called coup de grace, is used to intimate to the voices as well as instruments, that they are not to draw out the found to its natural length, but cut it short; that is, only continue it long enough to be heard, by which means there is a small silence between each sound; which has a very good effect in expressions of grief, to make signs; and also in expressions of wonder and surprize, &c.

TRONCONNE, or TRONCONN, in Heraldy, denotes a croissant or other thing, cut in pieces, and dismembered; yet so as that all the pieces keep up the form of a croissant, though cut at a small distance from one another.

TRONE, in Agriculture, a term applied provincially to a drain or small trench of that kind, in some places.

TRONE, in Geography, a town of Sweden, in Helsingland; 7 miles N.W. of Soderhamn.

TRONE Pound, in Scotland, contains twenty Scotch ounces. But because it is usual to allow one to the score, the trone pound is commonly twenty-one ounces.

TRONE Stone, in Scotland, according to Sir John Skene, contains nineteen pounds and a half.

TRONE Weight was the same with what we now call troy weight.

TRONECKEN, in Geography, a town of France, in the department of the Serre; 12 miles S.S.E. of Traarbach.

TRONINGE, a town of Sweden, in the province of Halland; 8 miles E. of Halmstad.

TRONIS, in Ancient Geography, a country of Greece, in the Phocis, which contained many ancient monuments.

TRONQUIERE, LA, in Geography, a town of France, in the department of the Lot; 12 miles N. of Figeac.

TRONTO, a river which forms a boundary between the marquisate of Ancona and the province of Abruzzo Ultra, and runs into the Adriatic, N. lat. 43° 52'. E. long. 13° 59'.

TRONUM, in Ancient Geography, a place on the route from Dyrrachium to Salone, between Pons Piliris and Bludium. Antonini.

TRONZAN,
or παραθανώ, a warlike trophy. This fanciful but elegant name was chosen by Linnæus, in Hort. Clifl. 143; for the
present singular and striking genus, because he conceived the
shiel-like leaves, and the brilliant flowers, shaped like
golden helmets, pierced through and through, and dined with
blood, might very well justify such an allusion. Particularly
when the plants are oftentatively trained over the trellis or
aloeve of a garden, as is commonly the case. The names of
Naffiurtium indicum, Cardamium, and Acrióvla, given by
preceding botanists, in reference to the cleft-like flavour
of the herbage, are all liable to exception, for various rea-
sons, explained in the Philosphia Botanica. It is remark-
able that the first of these has remained, as the popular
appellation of this genus; though Indian Cref, conveying
the same idea in English, with more precision, is preferrable.
Juf. 250. Lamark Illurj. t. 277. Gert. t. 79. (Car-
damidum ; Tourn. t. 244. Acrivola; Boer. Lugd-
Bat. ed. 2. v. i. 244.)—Chaf and order, Otandria Mo-
Rather, in our opinion, totally undetermined.

Gen. Ch. Cal. Perianth inferior, of one leaf, five-
cleft, slightly spreading, acute, coloured, deciduous; two
inferior segments narrowest; bafe elongated behind into a
straight, tubular, awl-shaped, closed, &c.; the longer than the
segments. Cor. Petals five, roundish, inserted between
the segments of the calyx; the two uppermost stellig; 
three lower with oblong fringed claws. Stam. Filaments
five, awl-shaped, short, unequal, declining; anthers ob-
long, straight, ascending. Pfl. German inferior, roundish,
three-lobed, fracted; style simple, erect, the length of
the flaments; stigma in three acute segments. Peric. Berries
three, combined, dry and leathery; externally convex,
depthfully furrowed and wrinkled; internally angular. Seeds
solitary, roundish, agreeing nearly with the shape of the
berries; their coat simple, very thin.

Eff. Ch. Calyx of one leaf, with a nectariferous lip
behind. Petals five, unequal. Berries three, dry, coria-
ceous.

Obf. Willdenow and Hort. Kew. have, by miiftake,
“petals four.”

1. T. minus. Small Indian-crefs or Naffurtium. Linn.
(Carodium minus et vulgare; Peiull. Peru. v. 3. 14.
Em. 252.)—Leaves petalate, slightly wavy; their angles
bristle-pointed. Petals acute.—Native of Peru, from
whence its seeds were brought very early to Europe.
Gerarde cultivated this fpecies, but it has been fupplicant
the following in our gardens. The writer of this found
it in general cultivation about Geneva, in 1787, and
restored it to the English collections. Like the reft of the
premif genus, this plant is a hardy annual in the natural
climate of Europe, though perennial, if sheltered from
frost. The flers are branched, lax and twining, many
feet in length, round, smooth, leafy. Leaves scattered,
roundish, somewhat laterally peltate, wavy, angular, entire,
smooth; their ribs radiant from the fpot where the long
wavy footstalk is inserted. Flowers axillary, foltary, on
long fimple flalks resembing the footstalks; their colour a
deeep yellow, variegated and fleared with orange and red.
The calyx is coloured like the petals; its fpur near an inch
and half long. Petals about an inch. Fruit greenish.
The whole plant has a hoit pungent taffe, resembing crefles
of various kinds. The flowers are flightly fragrant.

2. T. major. Great Indian-crefs or Naffurtium. Linn.
Sp.
(Cardamundum amphiior, folio, et majori flore; Feuill. 
Peruv. v. 3. t. 14. f. 8. f. 1. Viola indica scandens, nauturri 
sapore, maxima odorata; Herm. Lugd.-Bat. 628. t. 629.) 
—Leaves peltate, wavy, with blunt naked angles. Petals 
obtuse.—From the same country. Introduce into England 
in 1686, as appears by the manuscripts of Peter Collinson. 
This is now the most commonly cultivated species, seen in 
every cottage garden; as it rises, without any care, from 
self-sown seeds. The flowers are abundant from June till 
the whole plant perishes by the autumnal frosts. This 
species is larger than the foregoing, especially its petals, 
which are also much more rounded and obtuse. A daughter 
of Linneus is recorded as having observed a kind of flaming 
light from these flowers in an evening. We have watched 
for this phenomenon, but know not whether we ever 
perceived it, or whether our eyes were merely dazzled by 
the brilliancy of the colours. The seeds are hot and 
pungent, much used for pickles; and the flowers are often 
temixed with fallad herbs, both for ornament and flavour.

There is a double-flowered perennial variety of this 
species, common in greenhouses, and readily increased by 
cuttings.

Another variety, with small jagged petals, called T. 
pinnatum in Andr. Repof. t. 535, and Ait. Epit. 375, 
came up under our inspection in a bed of the common T. majus, 
and having been immediately sent to Meffrs. Lee and Kennedy 
at Hammersmith, in 1800, was preferred, and dispersed by 
cuttings all over the kingdom. It fearlessly ever attempts 
to form any seed, and is cultivated just like the double kind, 
whose botanical history, and origin, it appears to throw 
considerable light.

3. T. hybridum. Mule Indian-cres or Nauturrtum. 
1765. 32. t. 1."—Leaves wedge-shaped, five-lobed, entire, 
scarcey peltate.—A variety of the past, which, according to 
Linneus, sprung up accidentally in a garden at Stockholm. 
It rarely produced seed in the Upfal garden, but 
was propagated by cuttings. A seedling plant however is 
preferrved in the Linnean herbarium. The leaves are 
palmate, but wedge-shaped at the bafe, deflexed, on very 
long slender footstalks, which infection is quite at the bottom, 
and, nor do we find a single leaf in any degree peltate. The 
nectary is said to be obtuse; the corolla scarcely ever of 
any determinate form. We retain this as a species, merely in 
conformity to our predecessors. Its history is presumed to 
be authentic; but a few varieties are more extraordinary.

4. T. peregrinum. Fringed Indian-cres or Nauturrtum. 
Diff. 12. Willd. n. 4, excluding the synonym of Jacquin, 
and perhaps of Feuillée.—Leaves peltate, palmate, deeply 
five-lobed. Petals all jagged and fringed. Nectary straight, 
about twice the length of the corolla.—Native of New 
Granada, from whence it was sent by Mutis and his pupils 
to Linneus, who also received a garden specimen from his 
friend Duchefne. This species is not known in England. 
The leaves are all slightly, but uniformly, peltate, with five, 
rarely seven, deep lobes, various in breadth and acuteness, 
the middle one sometimes three-clft, the two next occasion-
ally having a lateral external lobe. Flowers rather smaller 
than in T. minus, though the nectary is as long, and of the 
fame taper form, scarcely curved, and by no means hooked. 
Petals unequal in size, all deeply and irregularly laciniate, 
with five capillary segments. We find these segments 
variable in breadth, like the foliage, in our numerous native 
specimens, but their general aspect is the same. Lamarck's 
t. 277. f. 3, represents this plant. Feuillée's plate and de-
scription, if good for any thing, must belong to a different 
species, or variety, three of whose petals are very small, 
and quite entire. His nectary is too imperfectly drawn for us 
to determine any character from thence. We have seen in the 
foregoing species how liable the petals are to the most extra-
ordinary variation, so that we dare not, from Feuillée's figure 
alone, attempt to define his as a distinct species.

5. T. adunca. Hooked Indian-cres or Nauturrtum. 
Sm. Tour on the Continent, ed. v. 1. 158. ed. 2. v. 1. 
165. (T. peregrinum; Willd. n. 4. Ait. n. 3. Jacq. 
Curt. Mag. t. 1351.)—Leaves peltate, palmate, deeply 
five-lobed. Two petals jagged; three smaller fringed. 
Nectary hooked, the length of the larger petals.—Native of 
Peru. Cultivated in the open air at Gibraltar, where it is 
called the Canary-bird flower, and perhaps in other parts 
of Spain. In Germany, England, and even the south of 
France, this is a greenhouse plant, very tender with us, 
and seldom ripening seed. The leaves do not much differ 
from the real T. peregrinum, but the flowers are constantly 
very distinct, nor do any specimens or figures, that we have 
seen, shew them to be variable in any degree worthy of 
notice. Their calyx is pale green, with a remarkably 
hooked spur, hardly an inch long if it could be straightened. 
Petals lemon-coloured; the two uppermost deeply jagged, 
rarely hair-pointed; three lower much smaller, oblong, un-
divided, copiously fringed. Jacquin's figure displays a 
luxuriance of foliage greater than we have met with, some 
leaves having seven, more or less pinnatid, lobes. There 
can be no doubt of this being a very distinct species. 
A figure of it was drawn for the 30th plate of our Species 
Botanica, but that work never proceeded to a third 
saceiculus, and the figure would now be superfluous.

6. T. pentaphyllum. Five-leaved Indian-cres or Nauturrtum. 
Lamarck Dict. v. 1. 612. Illustr. t. 277. f. 2. 
Wildd. n. 5. (T. quinatum; Hellen. Diff. 20. t. 1.)— 
Leaves quinate; leaflets ovate, entire, stalked. Petals un-
divided, shorter than the segments of the calyx.—Gathered 
by Commeron at Buenos Ayres, where this elegant and 
singular species climbs amongst Indian figs, and other 
shrubs, according to a manuscript note before us. The 
flora is slender, cloathed with numerous, irregularly scattered, 
leaflets, on footstalks an inch or an inch and a half long; 
leaflets on short partial stalks, acut, all undivided; the 
central one an inch in length; the two nearest the stalk not 
half so large. Flowers numerous, solitary, on axillary 
stalks extending rather beyond the leaves. Tube of the 
calyx above an inch long, conical, deep orange-coloured, 
contracted towards the end, which is oval; segments about 
the quarter as long, ovate, acute, green towards the point, 
two of them prominent, and rather larger than the rest. 
Petals not discernible in the flowers we have examined. 
Professor Hellenius describes them, "ovate, entire, nearly 
serate, a quarter the length of the segments of the calyx;", 
which answers to Lamarck's definition.

Three more species of this genus are described in the 
Flora Peruviana, one of them having only two petals; but 
of these no specimens have fallen under our inspection.

Tropæolum, in Gardening, furnishes plants of the 
herbaceous, annual, and perennial, trailing and climbing 
kinds, among which the species cultivated are the small In-
dian cres or nauturrtum (T. minus); and the great Indian 
cres or nauturrtum (T. majus).

In the first sort, there are varieties with deep orange-
coloured flowers inclined to red, with pale yellow flowers, 
and with double flowers.

And in the second kind, there are varieties with pale 
yellow
yellow flowers, orange-coloured flowers, and the doubleflowered.

It may be noticed that they are both natives of Peru, and commonly esteemed to be annual plants, though they may be continued through the winter, if they are kept in pots, and sheltered in a greenhouse or glass-cave, in the same manner as the variety with double flowers.

The stalks will climb fix or eight feet high, when they are trained up, and thus the flowers make a good appearance; but when they trail upon the ground, they will spread over the neighbouring plants and become unprofitable: the flowers are frequently eaten in fallads; they have a warm taste, like the garden cress, and hence the plant has its common name natterrium; they are likewise used for garnishing dishes: the seeds are pickled, and by some are preferred to moist pickles for sauce, under the false name of capers.

Method of Culture.—These plants, in all the single varieties, may be increased by seeds, which should be sown in the spring in patches where they are to grow in the borders, or in drills in the garden.

They afterwards only require to be kept free from weeds, and to be well supported by sticks.

The double variety may be increased by planting cuttings of the branches in pots of light mould in the early part of the summer, placing them in the shade, and giving frequent light waterings, but not too freely in the winter months; those planted early may be rendered more forward by being plunged in a moderate hot-bath.

It requires to be protected in the greenhouse in the winter, being well supported with sticks.

Both the forks are cultivated in the garden as flowering plants, and for culinary uses in fallads and pickles, being often in the former year trained against fences and walls, or to run on trellisses, rafterings, palings, hedges, the sides of arbours, and some other kinds of supports. Allo to run on branchy sticks set in the borders and other parts.

In the latter intention, the common single forks and varieties are often grown, which supply young tender leaves and berries that are much esteemed for some of the purport of eating, the former as a warm relishing agreeable fallad article, and the latter as a very pleasant fork of pickle while young and fresh. The flowers are also warm in their taste, and afford a very ornamental garnish, in many cases, both for fallad dishes and those of the next kind. When the plants are raised in these ways, the seeds should be sown in the small compartments of the kitchen garden in the later spring months, in small patches or shallow drills to the depth of an inch, and the plants when up have the support of a few branchy sticks, by which means they afford supplies in each of these ways for two or three months.

They all afford variety in the borders, clumps, &c. in the summer, and the double forks among potted plants.

TROPEUM Q. Fabii Maximi Emilianii, the trophies of Fabius, &c. in Ancient Geography, were situated, according to Strabo, near the place where the Ifere discharged itself into the Rhone, and on this spot 35,000 Romans, commanded by Fabius, defeated 200,000 Gauls, in commemoration of which, the general caused to be erected on the field of battle a trophy of white stone.

TROPEUS, in Mythology, a name given to Jupiter, for the same reason that Tropea was given to Juno.

TROPATENA, in Ancient Geography, a country of Asia, extending according to Ptolemy, from the territory of the Gelli-Margare to that of the Amaraici.

TROPE, a word or expression used in a different sense from what it properly signifies.

Or, a word changed from its proper and natural significance to another, with some advantage.

As when we say an affinity, for a flupid person; thunder-bolt of war, for a great captain; to wash the blackamoor white, for a fruitful undertaking.

This change of sense is never to be used, but where it gives a force and dignity, or renders the discourse more significant, weighty, and graceful.

It is called tropes, τροποι, from the Greek, τρόπος, a change; because the words are here transferred from the things they properly import, to others which they only import indirectly: and that tropes only signify the things they are applied to, by reason of the connection and relation those things have with those others, whose proper names they are.

This change, or inversion, is performed various ways; but chiefly four: whence arise four principal tropes; viz. the Metaphor, Metonymy, Synecdoche, and Irony; which see respectively.

Some authors confound trope with figure; but they are very different things. Most authors, as F. de Colonius, &c. make figure the genus, and trope a species; defining figure to be, an ornament in discourse, by which it is raised above the common language; and trope to be that peculiar kind of ornament which consists in the change of the sense, &c.

But Voluins makes trope and figure to be two collateral and independent things; defining trope to be the change of the sense, &c. and figure to be any ornament, except what becomes so by such change, &c. See Figures.

With regard to the difference between tropes and figures we may observe, that tropes mostly affect single words, but figures whole sentences: a trope conveys two ideas to the mind by means of one word; but a figure throws the sentence into a different form from the common and usual manner of expression; and besides, tropes are chiefly designed to represent our thoughts, but figures our passions. The reasons which have occasioned the introduction of tropes are, according to Quintilian, three: viz. necessity, emphasis, and beauty. Tropes were first introduced from necessity, because no language contains a sufficient number of proper words to express all the different conceptions of our minds. Tropes do also on many occasions express things with greater force and evidence than can be done by proper words; thus when Virgil (Efin. lib. vi. v. 842.) calls the Scipios two thunderbolts of war, he gives us a more lively image of the rapid force and speedy successe of their arms, than could have been conveyed by a long description in plain words. And moreover, beauty and ornament have been another cause of the use of tropes: and it is the business of an orator to entertain his hearers, at the same time that he instructs them. Accordingly some subjects require a more florid and elegant address than others, and variety of expression is also pleasing in a discourse.

The following directions, however, are proper to be observed in the choice of tropes. As every trope gives us two ideas, one of the word expressed, and another which by means of that the mind connects with it; it is necessary that the relation between these two should appear very plain and evident; for an obscure trope is always faulty, unless where some particular reason makes it necessary; and therefore tropes ought not to be too far-fetched, left they should thus be rendered obscure.—Again, as a trope ought to be very plain and evident, so likewise should it bear a due proportion to the thing it is designed to represent, to as much as its natural idea of it. Poets, however, are allowed a greater liberty in this respect than orators. Further, as a moderate use of tropes, judiciously applied, beautifies
beautifies and enlivens a discourse, so an excess of them causes obscurity, by running it into abstruse allegories and riddles. Moreover, as one use of tropes is plesurability and entertainment, we should endeavor to make use of such as are smooth and easy; and if it should be necessary to use a harsh trope, it is proper to soften it by some preface. Finally, care should be taken how we transfer tropes from one language into another. It was customary for the Roman soldiers to carry their money in their girdles; hence it was the same thing with them to say, *a person had lost his girdle* (Hor. Ep. lib. ii. ep. 2.), as that he *had lost his money.* And because the Romans wore the toga in time of peace, and a different garb when engaged in war, their writers sometimes use the word toga to signify peace. But as neither of these customs is in use among us, so neither would the tropes suit our language, or be generally understood by us. There is also a beautiful trope in the account of St. Paul's shipwreck, in the use of the word *αντωναλμαι* (Acts, ch. xxvii. v. 15.) which we translate to bear up into the wind, but which properly signifies to look or keep its eyes against it: to this purpose Plutarch says of Demosthenes, that he could not *αντωναλμαι των εργων, look against or resist the power of money.* Ward's Orat. vol. i. lect. 25. See also on this subject, Blair's Lect. vol. i. lect. 14.

Besides the four capital tropes above-mentioned, there are several inferior ones. When the trope is too bold, it is called an *hyperbole,* when continued, it is an *allegory,* when too obscure, an *enigma,* when it shocks us, or is too remote, a *catachresis.*

Add to these, other tropes: as the *metalepsis,* *anomalous,* and *litotes,* or *exaptnation.* See *Metaphor,* &c.

Some also refer the six kinds of scoffing, or derision, to the tropes: *wit,* the farcasm, *dialyse,* *charieintum,* *aleism,* *myterium,* and *mimesis,* but this without sufficient reason. See *Sarcasm,* *Irony,* &c.

**TROPEA,** in *Geography,* a town of Naples, in Calabria Ultra, built on a rock near the sea-coast, the see of a bishop, suffragan of Reggio. It contains five parish-churches, eleven convents, and about 4000 inhabitants, of whom the most wealthy and the handcraftsmen reside within the walls, whilst the husbandmen and labourers dwell in the outkirts, on the lands which they cultivate. Its situation is admirable, on the point of a lofty rock impending over the sea, and joined to the main land by an isthmus that is almost cut through at the gates, and thus leaves only a small passage to the town. A little to the N. lies a large island, on which some sheep are turned to graze, and a small one, with a hermitage placed on its summit, in a most romantic position. The streets of Tropea are narrow, the houses high, and built of stone, with great solidity. Two gates give admittance, one to those who come up the hill from the bay, and the other to such as approach along the high plain, on which is a pleasant walk near two miles long. This level is half a mile broad between the sea and a chain of mountains so steep and rugged, that they apparently cut off all communication by land with the rest of Calabria. The whole flat, and sides of the hills, yield abundance of grapes, mulberries, olives, pule, vegetables, and garden-fruit. Cobious streams run from the mountains, and after watering the orchards, are collected into one body, and turn a great number of mills. In 1783, it suffered greatly from an earthquake; 37 miles N.N.E. of Reggio. N. lat. 38° 40'. E. long. 16° 13'.

**TROPER,** in our *Old Writers,* is used for a book of alternate turns and responses in singing mas. Linndewode calls it *liber sequentiarum.*


Female on a separate tree, Cal. inferior, of one leaf, undivided or two-lobed. Cor. either wanting, or of four corona, roundish petals, closely embracing the germen. *Petals* seven, of four cells; style short, thread-shaped; stigmas two, oval-shaped, spreading. *Pericarp* nearly globular, corrugated, of one cell. *Seeds* from one to four, roundish, with a brittle skin.


Female, Calyx of one leaf. Petals four, or none. Stigmas two, oval-shaped. Berry superior. Seeds one to four.

Ob. Nothing can be more obscure or uncertain than the history of this genus, nor do we feel, by any means, confident that the plants assembled under it agree in natural, or essential, characters. We must content ourselves with giving the best account of them in our power, after having so far new-modelled the generic character as to avoid palpable contradictions.

1. *T. americana.* Ramoon Tree of Jamaica, or West Indian Trophis. Linn. Sp. Pl. 1451. Am. Acad. v. 5. 416. Willd. n. 1. Ait. n. 1. Swartz Obs. 372. (T. foliis oblongo-ovatis glabris alternis, floribus malacinsis spiratis ad alas; Browne Jam. 357. t. 37. f. 1. Bucephalon racemosum; Linn. Sp. Pl. 1661. B. frut. racemoso rubro; Plum. Lc. 55. t. 67. f. 1.)—Thorns none. Leaves ovate, pointed, entire, smooth. Berry oval, furrowed, with a simple point, and solitary feed. Native of dry exposed situations in the West Indies, flowering in spring. *Swartz.* A tree, about twenty feet high. *Leaves* alternate, on shortish furrowed stalks; rounded at the base; about four inches long, with one rib and several transverse interbranching reticulated veins. *Spikes* axillary, falcit, solitary, many-flowered, much shorter than the leaves, something downy, pale; the female ones shorter. *Berries* spiky, sessile, the size of large grapes, oval, with four furrows, and of a pleasant flavor. *Swartz* says, the trunk and branches, when wounded, discharge a very white, viscid, milky juice. He, as well as Browne, affe the foliage and young shoots to afford an agreeable wholesome fodder for all sorts of cattle.

2. *T. laurefolia.* Laurel-leaved Trophis. Willd. n. 2. —Thorns none. Leaves elliptic-oblong, acute at each end, smooth, entire. Berry with two horns, and two or four seeds.—Native of Quito and New Granada. A tree, with thick, nearly round, *branches.* Leaves alternate, falcit, three inches or more in length, tapering at each end, coriaceous, smooth on both sides; shining above; pale beneath. *Cliffers* axillary, the length of the fruit. *Fruit* globose, crowned with two dintant, oval-shaped, infixed horns, rather longer than the fruit itself. *Seeds* obvate; two only, according to Willdenow; four in a drawing sent by Mutis to Linneus, which the latter has marked Bucephalon, and which answers to exactly to Willdenow's description of the plant gathered in Quito by Humboldt and Bonpland, that we can have no doubt of its being done from the same species. In contemplating Willdenow's specific characters
of this and the foregoing, we cannot help thinking that he
took for the fruit of *Trapa americana*, the nut of *Trapa bicornis*,
(see *Trapa*), which Burmann has subjoined to Pluver’s


Native of Java. *Branches* round, greyish-brown, armed with
glabrous axillary thorns, which are incurved when young,
but become subeurrently frawned. *Leaves* frawned, larger
than the leaf, and very frawned on both sides; paler beneath.
*Female* flowers two or three together, frawned, concave.
*Male* not observed. The wood is used to dye yellow,
and, with the addition of indigo, green. The berries are
described by Rumphius about the fize of a strawberry, with
several seeds, and of a yellowish yellow. By his account
also, it should seem that this fruit is involved with a permanent
hardened *corolla*, evincing the generic affinity of the present
species to the last; though their belonging to *Trophis* must,
for the present, remain very doubtful.

TROPHONIUS, Oracle of, in Ancient Mythology, a
famous oracle in Boeotia, which was consulted with greater
ceremony than those of any deity, and subfitted long after
all those of Greece ceased. Trophonius, from whom the
oracle took its name, was the son of Erginus, king of the
Orchomenians, who, as well as his brother, were famous ar-
chitects, and built the temple of Apollo at Delphi. The
tomb of Trophonius had been altogether disregarded and
forgotten, when the Boeotians, on occasion of a great
drought, consulting the oracle of Apollo, were directed to
have recourse to Trophonius at Lebadea. They purified the
direction of the oracle, and obtained an answer, that
suggested the means of removing their calamity. In con-
sequence of this event, they confebrated to Trophonius the
wood in which he was interred, and in this wood erected a
temple to him, with his statue executed by Praxiteles.
The oracle of Trophonius was upon a mountain, within an
enclosure of white stones, upon which are elevated obelisks
of bronzes. In this enclosure there was a cavern, in the form
of an oven, cut out of the mountain by human art and
labour. Within this was another small cavern, with a very
straight entrance, into which those who consulted the oracle
were to pass, with a variety of ceremonies.

TROPHY, TROPESM, along the Ancients, a pile or
heap of arms of a vanquished enemy, raised by the con-
queror in the most eminent part of the field of battle.
The word is formed from the Latin *tropeca*, or *tropism*,
which Vellius deduces from the Greek *tropos*, the flight
of an enemy.

The word is also used for an artificial representation of
such a pile in marble, stone, or other matter. Such were
the trophies of Marius and Sylla, in the Capitol, &c.
The ancient trophies consis of Greek and Roman arms;
and the modern ones of arms of the various nations now in
use: as in those inscribed ones near Blenheim, in the Faus-
burg S. Antoine, and in the castle of Verailles. Some are
done in baso-relievo; as those of the Trojan column,
and the Attic of the court of the Louvre. The form of
these trophies cannot be better described than in Virgil’s
second Aeneid. Of those which Marius raised after the
Cimbrian war, still remaining at Rome, Fabricius has given
the following account. They are two trunks of marble
hung round with spoils; one of them is covered with a feally
corset, with shields and other military ornaments. Just be-
fore it is set a young man in the posture of a captive, with
his hands tied behind him; and all round were winged
images of victory. The other is set out with the common
military garb; having a shield of an unequal round, and
two helmets, one open and adorned with crests, the other
closed, without crests. On the fame trophy is the shape of
a soldier’s coat, with several other designs, which, by reason
of the decay of the marble, are no discovered without
great difficulty. These two trophies now adorn the front
of the Capitol.

Trophies are likewise frequently exhibited on medals of
the emperors, struck on occasion of victories; wherein, be-
sides arms and spoils, are frequently seen one or two captive
by the fides of the trophy.

Trophies, M. Vaillant observes, were, originally, nothing
but trunks of trees, which the victor planted on the mos
t eminent part of the conquered province, and hung them
with the spoils of the enemy, to perpetuate the memory of
the defeat.

Trophy, in Architecture, an ornament which represents
the trunk of a tree, charged or encompassed all round
about with arms or military weapons, both offensive and
defensive.

TROPHY-Money, a duty paid annually by the hou-
keepsers, in the several counties of England, towards pro-
viding harquebus, drums, colours, &c. for the militia.

TROPIANA, in Ancient Geography, a town of Italy, in
Calabria.

TROPICS, Tropic, in Astrology, two immovable
circles of the sphere, drawn through the solstitial points,
parallel to the horizon.

Such are the circles M E and N L, Plate XVI. Astro-
logy, fig. 140.

The tropics may be defined, two circles parallel to the
horizon, at such distance from it, as is equal to the sun’s
greatest reced from the equator towards the poles; or to
the sun’s greatest declination; or the obliquity of the
ecliptic.

Of the two tropics, that drawn through the beginning of
Cancer E, is called the *tropic of Cancer*. And that through
the beginning of Capricorn, the *tropic of Capricorn*.

They have their name from the Greek *tropos*, turn, con-
version; as being the limits of the sun’s way, or declination

towards north and south; so that when the sun is arrived at either of them, he turns the other way.

Hence, 1. Since the declination of the ecliptic is the arc $E\alpha$, or $L\alpha$; $EN$ will be the distance of the tropics; which is double the greatest declination.

2. Wherefore, if the sun's meridian altitude be observed, both in the winter and summer solstices, and the latter be subtracted from the former; the remainder will be the distance of the tropics; half of which is the greatest declination of the ecliptic.

Tropics, in Geography, are two lesser circles of the globe, drawn parallel to the equator, through the beginnings of Cancer and Capricorn.

Thee tropics are the planes of the celestial tropics, and at the distance of $23^\circ 29'$ from the equator, which is the sun's greatest declination.

Tropical Bird, in Ornithology, a species of the phaeton, called $lepturus$ by Buffon, on account of the slenderness of its tail. See Phaeton.

Tropic Keys, in Geography, small islands or rocks among the Virgin islands, in the West Indies, between Great Paffage island and Porto Rico.

Tropical Winds. See Trade-Winds and Wind. Tropical Year. See Year.

Tropino, in Geography, an ostruz of Russia, in the government of Tobolik, on the river Plazida. N. lat. 72° 36'. E. long. 90° 14'.

Tropists, or Tropici, the name of a sect. St. Athanasius, in his letter to Serapion, gives this appellation to the Macedonians, who were also called Pneumatomachi in the East, and Patrippines in the West.

The reason of the name Tropist was, that they explained the scripture altogether by tropes and figures of speech.

The Romans also gave the appellation Tropists to those of the reformed religion; in regard to their constraining the words of the eucharist figuratively.

Tropites, Tropites, a sect who, according to Philastrius, maintained that the Word was turned or converted into flesh, or into man.

This opinion they founded on that passage of St. John, in the Saviour, The Word was made flesh; as if it imported, that the Word was converted into flesh, and that he was clothed with our flesh and our nature.

Troppau, or Oppau, in Geography, a principality of Silicia, bounded on the N. by the principality of Oppeln, on the E. by Katober and Telchen, on the S. and W. by Moravia. The soil is good for corn and pasture, and abounds in fruit. It contains eleven cities or towns. The principality of Troppau once formed a part of Moravia, and with that marquisate came to Bohemia. It is now divided between the house of Avalria and the king of Prussia.

Troppau, or Oppau, a city of Silicia, and capital of the principality so called. It is situated in a fruitful country on the river Oppen, being walled, and containing an ancient palace of the princes, with three parochial churches, a college, three convents of monks, a monastery, and a commandery of the order of St. John; besides which, it is also the seat of the regency for the Bohemian part of Silicia. In 1758, the greatest part of this town was destroyed by fire. It belongs to Avalria; 45 miles S. of Oppeln. N. lat. 49° 50'. E. long. 18° 36'.

Troppowitz, a town of Silicia, in the principality of Troppau; 70 miles N.N.W. of Troppau. N. lat. 50° 1'. E. long. 17° 31'.

Troques, a bay on the S.E. part of lake Huron.

Trosa, a sea-port of Sweden, in Sudermanland, on the Baltic; 18 miles S.W. of Stockholm.

Trosburg, a town of Upper Bavaria; 13 miles E. of Waffeburg.

Trossachs, a tract of rugged rocks or mountains of stupendous height, situated about 10 miles W. from Callander, in the shire of Perth, Scotland, and accessible by a carriage-road. They exhibit an assemblage of wildnefs and rude grandeur, which fills the mind with the most sublime conceptions. It seems as if a vast mountain had been torn in pieces, and frittered down by a convulsion of the earth, and the huge fragments of rocks, woods, and hills, scattered in confusion for two miles on the fides of Loch Catherine. A huge column of these rocks was some years ago torn with thunder, and lies in very large blocks near the road. Where there is any foil their fides are covered with aged birch-trees. The fensible horizon is bounded by these trees on the fummit of every hill. On the north fide, the road is cut in some places through the solid rock, which rifes upwards of 200 feet perpendicular above the lake: at others the road is at the foot of lofty cliffs, and trees are growing where no earth is to be found.— Beauties of Scotland, vol. iv. Berthshire. Gazetteer of Scotland, 1806.

Trossuli, among the Romans, a name given by some to the guards that attended the kings of Rome, otherwise called celers.

Trossulium, in Ancient Geography, a town of Italy, in Etruria, in the vicinity of the country of the Volsci, according to Pliny.

Trot, in the Manage, one of the natural paces of a horse, performed with two legs in the air, and two on the ground, at the same time, crosswise, and continuing fo alternately, to raise the hind-leg of one fide, and the fore-leg of the other fide at once; leaving the other hind and fore-leg upon the ground till the former come down.

This action of his legs is the same as when he walks, except that in this trot his motions are more quick.

In this motion, the nearer the horse takes his limbs from the ground, the opener, the evener, and the shorter his trot will be. If he takes up his feet slovenly, it is a sign of stumping and lameness; if he treads narrow, or crofs, it betokens interfering or falling; if he treads long, it bews over-reaching; if he steps uneven, he indicates toil and weariness.

Three qualities are essentially necessary to make the trot useful. It ought to be extended, supple, and even or equal; these three qualities mutually depend upon each other; so that you cannot pass to the supple trot, without having first worked upon the extended trot; and you can never arrive at the even and equal trot, without having practiced the supple. The extended trot is that in which the horse trots out without retaining himself, being quite straight, and going directly forwards; and this, consequently, is the kind of trot with which you must begin. The supple trot is that in which the horse, at every motion he makes, bends and plays all his joints, viz. those of his shoulders, his knees and feet, which no colts, or raw horses, can execute, who have not had their limbs limped by exercise, and who always trot with a surprising lightness and awkwardness, without the least spring or play in their joints. The even or equal trot is that in which the horse makes all his limbs and joints move so equally and exactly, and his legs never cover more ground one than the other, nor at one time more than another. To do this, the horse must necessarily walk and collect all his strength, and, if the expression may be allowed, distribute it equally through all his joints. To go from the extended trot to the supple, you must gently and by degrees hold in your horse; and when by exercise he has attained sufficient ease and suppleness to manage
manage his limbs readily, you must insensibly hold him in still more and more, and by degrees you will lead him to the equal trot. All horses that are inclined to be rambing
should be kept to the extended trot. A horse of a sluggish
and cold disposition, which has, nevertheless, strength and
bottom, should likewise be put to this trot: as he grows
animated, and begins to go free, keep him together by little
and little, in order to lead him insensibly to the supple trot;
but if, while you keep him together, you perceive that he
slackens his action and retards himself, give him the aids
briskly, and put him forward, keeping him, nevertheless,
gently in hand; by this means he will be taught to trot
freely and equally at the same time.

The only proof, or rather the most certain sign of your
horse's trotting well is, that when he is in his trot, and you
begin to put him a little, he offers to gallop. The principal
effects of a trot are to make a horse light and active,
and to give him a just appui.

The manner of trotting a colt who has never been backed
is as follows: put a plain fishtail in his mouth; fit a cavesson
to his nose, to the ring of which tie a longe of a reasonable
length. Let a groom hold this longe, who, having got at
some distance from the colt, must stand full in the middle
of the circle which the horse will make. Let another follow
him with a long whip or chambriere in his hand. The colt,
being alarmed, will be forced to go forward, and to turn
within the length of the cord; the groom must hold it tight
in his hand; by this means he will draw in, or towards the
centre, the head of the colt, and his course will of confe-
quence be without the circle. See FOAL, and Backing of a
House.

In working a young horse after this manner, do not pref
or hurry him. Let him walk first, and afterwards put him
to the trot. If you neglect this method, his legs will be
embarrassed; he will lean on one side, and be more upon
one haunch than the other; the inner fore-foot will strike
against the outer one, and the pain which this will occasion
will drive him to seek some means of defence, and make
him disobedient. If he refuses to trot, the person who
holds the chambriere will animate him, by trotting him, or
striking the ground with it. If he offers to gallop instead
of trotting, the groom must shake his cord that is tied
to the cavesson, and he will fall into his trot. Berenger's
Art of Horsemanship, vol. i. ch. 4.

TROTHY, in Geography, a river of England, in the
county of Monmouth, which runs into the Wye, near
Monmouth.

TROZTA, a river of Ruffia, which runs into the
Kama, 16 miles N. of Kofa, in the government of Viatka.
TROU, L.e, a settlement in the N. part of Hifpaniola.
N. lat. 19° 35'. W. long. 72°.

TROUBADOURS, a name given to the ancient poets
of Provence, who wrote, set, and sung their own veres.
See Provencal Poets.

Some will have the word borrowed from troubier, to find,
by reason of their inceptions, whence they are called trou-
veres; though others take them to have been called trob-
adores; by reason they sung their poems to an instrument
called a trompe or trompe.

The poetry of the troubadours consisted in sonnets, psy-
torals, fongs, syrventes, or stafires, which were much to their
taste; and in tenons, which were love-dithuses.

Jean De Notre Dame, commonly called Noitradamus, a
procurer in the parliament of Provence, wrote an ample
discourse of these poets. He makes their number seventy-
fix.

Pufquier tells us, he had an extract of an ancient book,
belonging to cardinal Benoits, entitled "Los Noms da-
quels qui firent Tenfons & Syrventes," which made their
number ninety-six; among which was an emperor, viz.
Frederic I. and two kings, viz. Richard I. of England, and
a king of Arragon: with a dauphin, several counts, &c.: not
that all these had composed entire works in Provengal;
some of them had not brought forth any thing beyond
epigrams.

Pufquier tells us, he had an extract of an ancient book,

Petrarch speaks, with applause, of several troubadours
in the fourth chapter of the Triumph of Love. The Ita-
lian poets are said to have borrowed their best pieces
from the troubadours. Pufquier declares expressly, that Dante
and Petrarch are, indeed, the fountains of Italian poetry; but
fountains which have their sources in the Provengal poetry.

Bouche, in his History of Provence, relates that, about
the middle of the twelfth century, the troubadours began
to be esteemed throughout Europe; and that their credit
and poetry were at the highest about the middle of the four-
teenth. So that they flourished in Europe about two hun-
dred and fifty years, viz. from 1120 or 1130 till the year
1382. He adds, that it was in Provence that Petrarch
learned the art of rhyming, which he afterwards practifed,
and taught in Italy.

Strolling musicians, under the appellation of Jongleurs,
(which see, ) abounded in France fo early as the time of
Charlemagne, who forbids their admission into convents;
and in the first capulitary of Aix-la-Chapelle, this prince
speaks of them as perfons branded with infamy. They
continued, however, to amuse the great in private, as well
as the people in public, as a distinct body of men, till the
troubadours introduced poetry into France, in the dialect
of that country. Their licentiousnes was frequently re-
pressed, and their conduct regulated, by the police; and
during the reign of Philip Augustus, the troubadours and
minstrels, or jongleurs, were involved in the same disgrace,
and for some time banished the kingdom; which left such
a stigma upon their order, as no efforts of genius, or au-
terity of manners, could entirely eflace, though they were
afterwards recalled, and in some degree restored to public
favour.

It is observed by a late elegant French writer, that though
the proscriptio of music and poetry, and the kind of
inquisition which Philip eftablifhed against the jongleurs
in France, may have originated from the laudable intention
of repressing those disorders, which the abuse of their pro-
feffion had occasioned; yet, if he had reflected that the
fate of letters was at that time in the hands of the trou-
badours, and that among every people approaching towards
civilization, the progress of virtue is generally propor-
tioned to the cultivation of arts and literature; he would
have inflicted a less ignominious punishment on the objects
of his displeasure; for such is the empire of prejudice, that
the anathema it pronounces against the abuse of a profeffion
remains in full force, even after the reformation of those who
exerice it. This author ventures to pronounce the jong-
leurs, or troubadours and minstrels, notwithstanding the con-
tempt with which they are named at present, to have been
the fathers of literature in France: they, says he, banished
scholastic quarrels and ill-breding, and polished the manners,
eflablifhed the rules of politefns, enlivened the conver-
sation, and purified the gallery of its inhabitants. That
urbanity, continues he, which distinguishes us from other
people, was the fruit of their fongs; and if it is not from
them we derive our virtues, they at least taught us how to
render them amiable. Tableau Historique de Genes des
Lettres, par l'Abbe de Louvichamps, tom. v. cited by
Mr. T. Warton (Hist. of English Poetry) is of opinion that there were two forts of French troubadours who have not been sufficiently distinguished. If we diligently examine their history, we shall find that the poetry of the first troubadours consisted, as we have already intimated, in satires, moral fables, allegories, and sentimental sonnets. So early as the year 1180, a tribunal called the "Court of Love," was instituted both in Provence and Picardy, at which questions in gallantry were decided. This institution furnished ample matter for the poets, who threw the claims and arguments of the different parties into verse, in a style that afterwards led the way to the spiritual conversations of Cyprian and Chloia. Fontenelle does not scruple to acknowledge, that gallantry was the parent of French poetry. But to sing romantic and chivalrous adventures was a very different talk, and required very different talents. The troubadours, therefore, who composed metrical romances form a different species, and ought always to be considered separately. And this latter class seems to have commenced at a later period, not till after the crusades had effected a great change in the manners and ideas of the western world. In the mean time, as Warton conjectures, the art of the troubadours, commonly called the "Gay Science," was first communicated from France to the Italians, and afterwards to the Spaniards. If this be true, it is at the same time highly probable, as the Spaniards had their "Juglares," or convivial ballads, very early, because from long connection they were intimately acquainted with the fictions of the Arabsians, and were naturally fond of chivalry, that the troubadours of Provence in great measure caught this turn of fabling from Spain. The communication, without mentioning any other obvious means of intercourse, in an affair of this nature, was easy through the ports of Toulon and Marfeilles, by which the two nations carried on from early times a constant commerce. Even the French critics themselves universally allow, that the Spaniards, having learned rhyme from the Arabsians, through this very channel conveyed it to Provence. Tasso preferred "Amadis de Gaul," a romance originally written in Spain by Vafo Lobeyra, before the year 1500, to the most celebrated pieces of the Provençal poets. The early universality of the French language very much contributed to facilitate the circulation of the poetry of the troubadours in other countries; and thus they contributed in a very considerable degree to the revival and diffusion of literature in Europe. See Jongleurs, Minstrel, Mystery, Provençal Poets, Romance.

TROUBLES, in Geography. See Coal.

TROVE, in Law. See Treasure-Trove.

TROVER, an action which a man hath against one that, having found any of his goods, refuseth to deliver them upon demand, but converts them to his own use; from which finding and converting, it is called an action of trover and conversion.

Actions and detinue are frequently turned into actions upon the case, far trover and conversion.

The injury in this case lies in the conversion: and, therefore, the fact of the finding, or trover, is now totally immaterial; for the plaintiff needs only fugget (as words of form) that he lost such goods, and that the defendant found them; and if he proves that the goods are his property, and that the defendant had them in his possession, it is sufficient. But a conversion must be fully proved; and then in this action the plaintiff shall recover damages equal to the value of the thing converted, but not the thing itself; which nothing will recover but an action of detinue or repelvin. See Restitution of Stolen Goods.

TROUGH, a hollow wooden vessel for kneading dough in, or to beat apples in for cyder; also a piece of the trunk of a tree made hollow, to feed swine in; or an open pipe or channel, made of boards, for the conveyance of water.

TROUGH of the Sea, is the hollow cavity made between two waves, or billows, in a rolling sea.

When a ship lies down there, they say, she lies in the trough of the sea; in which case she rolls heavily, because the letting of the sea is always produced by the wind, and, consequently, the waves, and the trough between them, will be at right angles with the direction of the wind.

TROUP HEAD, in Geography, a cape of Scotland, on the north coast of the county of Banff; 10 miles W. of Kinnaid's Point. N. lat. 57° 39'. W. long. 2° 11'.

TROUPESBURGH, a township of New York, in the United States, situated in the S.W. corner of Steuben county, 25 miles S.W. of Bath village, erected in 1808, from the S. part of Canisteo and a small part of Addison, and extended to Allegany county in 1811; bounded N. by Canisteo, E. by Addison, formerly Middletontown, S. by the state of Pennsylvana, and W. by Allegany county. It is 18 miles long E. and W., and about 10 miles wide. The inhabitants were in 1810, consisting of 292 persons and 36 feclusion electors.

TROUS de Loup, in Field Fortification, are round holes, about six feet deep, and pointed at the bottom, with a flake placed in the middle. They are frequently dug round a redoubt, to obstruct the enemy's approach. At top they are circular, and about four feet and a half in diameter.

TROUSSEQUE, in the Manuge. See Dock.

TROUSSEQUIN, a piece of wood, cut archwise, raised above the hinder bow of a great sledge, and serving to keep the bolters firm.

TROUT; Salmo fario of Linnaeus, in Ichthyology, a very valuable river-fish. See Salmo Faro.

The colours of the trout, and its spots, vary greatly in different waters, and in different seasons; yet each may be reduced to one species. In Llyndivi, a lake in South Wales, are trouts called cach y dael, mentioned by Pennant. See Salmo Faro.

In Lough Neagh, in Ireland, are also trouts called budding, some of which weigh thirty pounds; and others of a much superior size are taken in Hulse-water, a lake in Cumberland, supposed to be the same with the trouts of the lake of Geneva. In the river Honyn, not far from Machynlleth in North Wales, and in one of the Snowden lakes, is found a variety of trout, naturally deformed, having a strange crookedness near the tail.

The Hon. Mr. Daines Barrington suggests, that gillaroo, the name given to certain trouts in the Irish lakes, (see Salmo Faro,) may be either a corruption of Killala, the name of a town near which these trouts are caught, or formed of the Welsh cylla, q. d. flamach, and the Irish raath, q. d. strong; so that gillaroo may be the same as strong flamach. From the observations both of Dr. Watson and Mr. J. Hunter, there is no reason for considering the flamach of these trouts as gizzards, but as true flamachs. That of the English trout is of the same kind with the flamach of the gillaroo trout, but its coat is not so thick by two-thirds; and, therefore, the difference in the thickness of the flamachs, which may be occasioned by the nature of the waters, or adapted to the purposes of containing a greater quantity of flesh-fish than the flamachs of our trouts, does not warrant its being clasped as a different species. The flamach even of the gillaroo trout can pollute fearfully any power of grinding, as the whole cavity is lined with a fine villous coat, the internal surface of which appears everywhere to be digestive, and by no means fitted for mastication.
TRO

tification. Thse stomachs are sometimes served up at table
in Ireland, under the name of grizzards. See on this sub-
ject, Phil. Trans. vol. lixiv. part i. p. 116. 121. 310.
Trouts are a very voracious fish, and afford excellent di-
version to the angler (see Trout-Fishing); they shift their
quarters to fpawn, and, like a salmon, make up towards the
heads of rivers to deposit their roes. The under jaw of the
tout is subj ect, at certain times, to the same curvature as
that of the salmon.

Mr. Pennant has described a species that migrates out of
the sea into the river Ef, in Cumberland, from July to Sep-
tember, and called from its colour the cubiting. When
dressed, its flesh is red, and most delicious eating. On their
first appearance from the salt-water, they have the salmo-
lofhe adhering to them. They have both melt and fpawn,
but no fry has as yet been observed. The Scots call this fish
phinos; they never exceed a foot in length; the upper jaw
is a little longer than the lower; in the first are two rows of
teeth, in the last one; and on the tongue are fix teeth; the
back is straight; the whole body of an elegant form; the
lateral line straight; the colour between that and the top of
the back, dusky and silvery intermixed, beneath the line of
an exquisite silvery whitenefs; first dorsal fin spotted with
black; the tail black and much forked; the third dorsal fin
has eleven rays; the pectoral thirteen; the ventral nine,
Trout, Salmon. See Salmo Trutta.
Trout-Fishing. See Trout-Fishing.
Trout-Coloured. A horse is faid to be of this colour,
when he is white, and speckled with spots of black, bay, or
ferr; especially about the head and neck.

Trout Creek, in Geography, a souther branch of Sal-
mon creek, in Franklin county, New York, on which are
mills in Erazville, Dickinson, and Confiable.
TROUTBECK, a river of England, in Westmoreland,
which runs into the Eden, 3 miles below Appleby.
TROW, a kind of boat, sometimes with fquare and
upright head and stern.

TROWBRIDGE, in Geography, a confiderable market
and manufacturing town in the hundred of Melkham
and county of Wilt, England; is situated at the distance of 28 miles
N.W. from Salisbury, and 98 miles W. by S. from London.
Neither the etymology of its name, nor the period of its origin,
can be ascertained with accuracy; but as it is not mentioned
in Domesday book, we may conclude that it had no existence
when that work was compiled. The earliest notice of it in
history occurs in the reign of king Stephen, about the year
1150, when it appears that Trowbridge was occupied by
the partisans of the empress Maud, and was besieged and
taken by Stephen; but whether there was any town at that
era does not appear. It is certain, however, that the lordship
of Trowbridge formed part of the estates of Henry, duke of
Lancaster, whose daughter Blanche married John of Gaunt,
son of Edward III. When Lancaster was constituted a
county-palatine, this manor, as part of the dukes's property,
was recognized in the charters as one of the honors
attached to it: and here it is probable the court of Chanery
for the duchy was held, as the rents for the same are paid at
Trowbridge to this day. As the entire duchy of Lancaster
was vested in the king in the reign of Henry VII., this town,
as belonging thereto, became a royal demeine. In the next
reign it was granted to Edward, earl of Hereford, after-
dwards duke of Somerset, at whose attainder it again reverted
to the crown. It was restored to his son by queen Eliza-
beth, and continued the property of his collateral descendants
till the reign of Charles I., when Sir Francis Seymour was
created baron Seymour of Trowbridge. It afterwards passed
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to the family of Manners, by the marriage of lady Frances
Seymour with John, marquis of Granby; and from him de-
cended to the present duke of Rutland, who sold it in 1809
to Thomas Timbrell, esq.

Like the generality of manufacturing towns, Trowbridge
is very irregularly built. None of the streets seem to have
been formed on any regular plan, but have been construct-
ed according as private interest or convenience suggested.
Hence, though there are several handsome houses in the
town, yet they appear to disadvantage from the narrow-
ness of the streets, and the intermixture of old and mean
buildings. The extent and importance of Trowbridge may
be he best determined by the parliamentary report of 1811,
by which it appears to have then contained 1170 houses,
and 6175 inhabitants. Of the latter, the greater part was
engaged in the woollen manufacture, which was first esta-
blised here in the early part of the reign of Charles VII.
then, who lived in that reign, gives the following account of
this town. "From Bradeforde to Thoroughbridge, about a
two mile by good corn, pasture, and wood, I entered to the
towne by a fone bridge of three arches. The townve
standeth on a rokky hille, and is very well buildyd of fone, and
furnisht by drapery. Of later tymes, one James Terumber,
a very rich clothier, buildyd a notable faire house in this
towne, and gave it at his deth, with other landes, to the found-
ing of two Cantuaries preltes ys Thoroughbridge churche.
This Terumber made also a litle alme-hone-forsy Thorough-
bridge churche, and yt he be a fite poore folkes, having a three-
pence by the week towards their finding. Horton, a clothier
of Bradeforde, buildyd of late dayes dyvers fyne houses in this
town. Old Baylie buildyd of late in this town; he was a
rich clothier; Baillie's fone now drapeth the town, and
also a two miles out of it, at a place yn the way to Farley
castle. One Alexandre is now a great clothier in the towne."
The cloths now principally manufactured here are superfine
broad-cloths and kerseymeres; the weekly produce is el-
minated at ninety pieces of the former, and four hundred
and ninety pieces of the latter. Trowbridge not being incorpo-
rated, its government is vested in the county magistrates, who
hold the petty seions for the Trowbridge division of the
hundred alternately here and at Bradford. A court-leet and
a court-baron are also annually held; in the former the con-
fables, tything-men, and cornets of the market are appointed.
The duty of the last-mentioned officers is to inspect the pro-
visions brought to the market, and to see that the weights
and measures accord with the proper standards. The market-day
is Saturday; and a fair is held annually, at which consider-
able quantities of woollen goods, cattle, cheese, &c. are sold.
In the market-place formerly stood a stone cross, which was
taken down towards the end of the last centurie, on the pre-
sence of its obstructing the communication of the High-
street, and injuring its appearance. It is thus noticed by
Leland: "There is a fair standing place for market-men to
stand up in the harte of the towne, and this is made viij fquare,
and a pillar in the midle, as there is one made in Malmyby
far fairer than this." The church of Trowbridge, though
upwards of four hundred years old, is still characterized by
the appellation of New Church, which implies that another
must have previously existed here. By whom the new struc-
ture was raised is not distinctly recorded; but it appears
probable, that a great part of the expense was incurred by
James Terumber, the rich clothier mentioned by Leland,
and the remainder by other benevolent individuals connected
with the town. This opinion is founded on the contents of
a deed of frowstment by Terumber, dated January 11, 1483,
and preferred in the vestry-room; by which he directs that,
out of his elates therein enumerated, ten marks should be
paid
paid yearly to a priest to pray for his soul, and the souls of all other benefactors whose names should be inscribed in a table hanging at the high altar. Considered in an architectural point of view, this church is deserving of notice. Leland styles it "light and fair," and tells us that one Molines, "a man well-learned," was parson there in his time. It is a spacious edifice, and consists of a nave, chancel, two side-aisles, with chapels attached, a north and south porch, and a large tower at the west end, surmounted by a taper spire. The nave and aisles are embattled, and are ornamented with crocketed pinnacles. Both porches are unusually lofty. The nave has a flat ceiled roof, highly decorated with flowers: it is separated from the aisles by five arches on each side, supported by clustered columns with ornamented capitals. Some of the windows contain fragments of painted glass, particularly the east windows of the chapels, which are large, and display seven days of lights, separated by mullions. The font is lofty, and covered with a profusion of tracery and panelling, with sculptural representations on shields, emblems of the crucifixion. The living is a rectory, in the gift of the duke of Rutland, he having reserved the advowson when he held the manor: the present rector is the Rev. Mr. Crabbie. This church is the only place of religious worship on the establishment in the town; but there is a chapel of ease dependent upon it at Staverton, a hamlet within the parish. Like most manufacturing towns, Trowbridge abounds with Dintferers, and consequently contains several meeting-houses. The charitable institutions in Trowbridge are an almshouse, and a school for the education of thirty boys. The former was founded by a person of the name of Verbury. The school-house stands in the church-yard, near the spot where the almshouse erected and endowed by Termper was placed, which has been recently taken down, and the funds appropriated to the use of the parish poor generally. Of the nave no part is now standing; but its site is distinguishable by the remains of the most and vault by which it was surmounted. It is more elevated than the town, and still retains, in the apellation Court-hill, a marked allusion to its ancient appropriation. As there are no data to determine by whom the cated was erected, so the period of its demolition is equally uncertain; but it must have occurred previous to the reign of Henry VIII., for Leland says of it, "The caeller floode on the fouthe side of the toone. It is now clene down. There was in it a feuen gret towres whereof peaces of two yet flande." The college was formerly approached from the town by a drawbridge over the moat, which has given occasion to a plausible conjecture that the name Trowbridge is a corruption of Drawbridge, near which the retainers of the college might probably have built their houses in the infancy of the town. This supposition derives some support from the fact, that some of the buildings adjoining Court-hill posses considerable marks of antiquity.

Among the distinguished natives of this town is George Keate, a writer of considerable eminence in the last century. He was descended from the ancient and opulent families of the Hungerfords and Seymour. He died June 27, 1797, aged 67.

About two miles to the south-east of Trowbridge is Rodw Aflton, the seat of Richard Godolphin Long, esq. one of the present representatives of the county of Wilts. The house is large and commodious, and has lately undergone considerable alterations and improvements, under the superintendence of Jeffry Wyatt, esq. architect. The park is extensive and well wooded.—Beauties of England and Wales, vol. xv. Wiltshire, by John Britton, F.S.A. 1815.

TROWEL. See BRICK-Layer.

TROWEL, Garden, a tool of the trowel kind, which is made of iron, in a hollow or scooped form, and is an useful implement in taking up numerous sorts of small plants and bulbous roots, and replanting them in pots, fowing in patches, and various other similar light works: it should be from six to twelve inches long in the plate, and half as broad, and fixed on a short handle, to hold with one hand. From its being hollowed semicircularly, it is remarkably handy in removing many sorts of small plants with a ball or lump of earth whole about their roots, so as not to feel their removal; lifting several sorts of bulbous flower-roots, after the flowering is past in summer; planting bulbs in patches or little clumps about the borders, as also for digging small patches in the borders for sowing hardy annual flower-seeds on; likewise for filling mould into small pots in planting any sort of plants, stirring the surface of the mould in pots, and from earthing them when necessary: it is also highly useful for filling in earth about plants in hot-beds, and under frames, or any small compartments where a spade cannot be readily introduced.

They should be had of different sizes to suit different purposes.

TROWERT, Island, in Geography, a small island in the East Indian sea, near the south coast of Java. N. lat. 7° 2'.

TROWERYN, a river of North Wales, which rises from a lake in Merionethshire, and runs into the Dee.

TROLE, or TROLE, the Bowl, in English Antiquity, was a common phrase in drinking for passing the vellum about, as appears from several of our old catches.

TROERS, among Sailors, a fort of loose breeches of canvas, worn by seamen, &c.

TROXIMON, in Botany, from τροχόειαν, eateable, a name chosen by Gartner, without much propriety, for this genus, which he very justly distinguished from TRAGOPOGON: see that article, as well as ARNOPOGON, thereunto subjoined.


Gen. Ch. Common Calyx simple, ovate, of numerous lanceolate equal scales, in two rows. Cor. compound, imbricated, uniform. Florets various in number, all perfect, of one petal, ligulare, longer than the calyx, abrupt, with five teeth. Stam. Filaments, in each floret, five, capillary; anthers united into a long furrowed tube. Pist. Germen, in each floret, oblong; style thread-shaped, the length of the flaments; fligmas two, revolute. Peric. none, except the permanent, finally spreading, calyx. Seeds solitary, oblong, slender; seed-filile, capillary, roughish. Recept. naked, dotted.


Obst. We do not find the calyx ever "imbredicated with unequal scales," as Gartner says it sometimes is. Such a character belongs to Sonchus. Neither is it perfectly simple; for, as far as we can discern in every known species, the scales, or leaves, stand in a double row, or circle, the outer ones alternate with, and overlapping the inner, at their base. The simple feed-down effectually distinguishes this genus from Tragopogon, nor are the habits of the plants similar.


—Native
Native of the banks of the Missouri. Biennial, with bright-yellow flowers. Purb. Dr. Sims says perennial.

The original specimen was sent by Clayton from Virginia, in 1734, to Gronovius, who communicated it to Linnaeus, inferred "Dandelion with undivided leaves." Hence the latter took his specific name, the meaning of which he probably did not investigate, and he might perhaps call it *Dandelion*. The name is, at any rate, as bad as can possibly be, and we are happy in getting rid of it, by discovering the plant to be Mr. Pursh's first species of *Troximon*. Of this indeed neither this author, nor any one else, was aware; but though we have seen no specimen from Mr. Pursh, his specific character leaves no doubt in our mind, and Gartner originally suggested that this Linnaean *Tragopogon* was a *Troximon*. The leaves are radical, glaucous, very smooth, even, quite entire, four or five inches long, taper-pointed, with a foliary mid-rib, and some flight longitudinal veins. *Flower-flalks* half as long in our specimen, but they probably are incomplete; Gronovius says twice as long; they are simple, clothed in the upper part with prominent, tawny, glandular bristles, most crowded just under the *flower*, which is yellow, above an inch wide. Calyx smooth and glaucous, shorter than the corolla, its leaves folding over one another as described in our general character, but of equal length, not truly imbricated. The point of each is pale, a little dilated and membranous, or, as Pursh says, *cuspidate*. *Seed-down* serrate and rough, not feathery. Gronovius rightly noted this circumstance. We can scarcely doubt the figure in Curtis's *Magazine* being our plant, though a larger specimen. The roughness of the flower-slalk indeed is wanting, and the points of the calyx not shown.

2. *T. lanatum*. Woolly *Troximon*. (*Tragopogon lanatus*; Linn. Sp. Pl. 1111. Willd. Sp. Pl. v. 3, 1495. Leontodon lanatus; Linn. Am. Acad. v. 4, 287; excluding the reference to Rauwolf, 117, not 217, which rather belongs to *Scorzonera tuberofa* see that article, n. 12.)—Leaves linear-lanceolate, undulated, clothed with fibby hairs, as well as the radical flower-slalks and calyx.—Native of Palestine, from whence, if we mistake not, the Linnaean specimen was brought by Haffel quitt. The root has a perennial aspect, its crown bearing several tufts of upright, narrow, thrashing leaves, three or four inches long, considerably undulated, entire, loosely clothed, on both sides, with long, soft, fibby, woolly, or rather silky, hairs: the bases of the outer ones pale, dilated, membranous and smooth. *Flower-slalks* radical, foliary, from the centre of each tuft of leaves, and rather exceeding them in height, angular, covered with similar hairs to those of the foliage. *Flowers* foliary, eret, yellow, nearly the size of the fall, but with fewer *flowers*. Calyx hardly so long as the corolla, very fibby at the base, its leaves eight or ten, in two rows, lanceolate, equal, straight, hairy, somewhat membranous at the edges. We can just perceive, in the flowers, that the *seed-down* is simple and rough. Gartner has indicated the true genus of this species, as well as of the foregoing. It appears nearly related to *Scorzonera tuberofa*, a plant we have never seen; but whole puhescence is not described as at all like that before us; and the recurved or revolute points of its *calyx-flake*, which moreover are unequal, and truly imbricated, in Palas's figure, remove all ambiguity.

3. *T. virginicum*. Virginian *Branching Troximon*. Pursh n. 2. (*Tragopogon virginicum*; Linn. Sp. Pl. 1111. Hyoferis prunainoides; Wild. Sp. Pl. v. 3, 1615. H. amplexicaulis; Michaux Boreal.-Am. v. 2, 87.)—Smooth and glaucous. Stems erect, somewhat leafy, with several flowers.—In meadows and moist shady woods, from Pennsylvania to Carolina, flowering in July and August. Root perennial. Herb about a foot high, with handsome yellow flowers. Purh. The radical leaves are either obtuse or lyrate, oblong, or toothed, tapering down into thrashing membranous *foot-flanks*, together with which they measure about four inches; those of the stem few, ovate-oblong, feathery, the uppermost diminished to one or two *bracteas*, at the base of the long partial *flower-flanks*, three or four of which together compose a fort of umbel. *Flowers* erect. Calyx of eight or ten glaucous smooth leaves, half an inch in length. *Florets* twice as long, not very numerous. *Seeds* few, smooth. *Receptacle* small, dotted, naked.—Specimens from Kalm and others from the late Dr. Muhlenberg differ widely in their foliage, that of the former being deeply lyrate, the latter fearly toothed; yet the plants are so alike in other respects, that we cannot, without further information, distinguish them as species.

4. *T. cuspidatum*. Pointed-flaked *Troximon*. Pursh 742. "Stalk radical, single-flowered; rather downy in the upper part. Leaves linear, downy and wavy in the margin. Calyx- scales imbricated, pointed, smooth."—Found by Mr. Bradbury, in Upper Louisiana. Perennial. *Flowers* large, yellow. Reflembles *T. glaucum*. Purh. By the specific character, we should be inclined to fulfill this might be the *Leontodon Dandelion* of Linnaeus, our first species of *Troxim*, were not the size of the flowers against it.

TROY, or ILIUM, in Ancient Geography, a city of Troas, or Phrygia Minor (which sec.), rendered immortal by the inimitable poems of Homer and Virgil, was built by Troy, king of that country, who called it Troy from his own name, and Ilium from that of his son Ilius. It was placed on a rising ground near mount Ida, and about five miles from the shore. Of this city, there subjected feantry any remains in the time of Strabo; and most of the ancient as well as modern writers have confounded the old and new Ilium. The new city, built nearer the sea-coast, was reduced to a village in the time of Alexander the Great, and was remarkable for nothing but a temple of Minerva, which that prince visited, after having defeated Darius on the banks of the Granicus, and enriched with offerings, bestowing ample privileges on the place, and honouring it with the title of city. He likewise ordered the buildings to be repaired, and the whole city to be embellished by Lyfimachus, one of his generals, who surrounded it with a wall of forty furlongs in circumference. It was again reduced to the condition of an inconsiderable village, when the Romans first entered Asia. As they pretended to be the genuine offspring of the ancient Trojans, no cost nor pains were spared to restore it to its ancient lustre, especially in the time of the Caesars. Augustus sent thither a colony, embellished the city with many flatly buildings, and enriched it with ample privileges and exemptions. Belloniuss tells us, that in his time the walls were yet standing, with the ruined monuments of their turrets; and that he spent four hours in compassing them, partly on horseback and partly on foot. He observed round the walls a great many marble tombs of exquisite workmanship, with their covers entire. Two of these were still remaining when M. Spont visited those places; who informs us, that they were in the style of the ancient Romans, and not unlike thse that are to be seen at Arles; whence he concludes them to be the remains of that Troy which was rebuilt by the Romans. Belloniuss likewise observed the ruins of three great towers, one on the top of a hill not far from the shore, another about the middle, and the third at the bottom, with a great many large cisterns to receive the rain-water. Spont observed on the south of the haven three columns lying among the briars, of which two were entire, and each of one single piece, being
TROY.

The monuments and, as is now generally believed, the First Monuments to the Ancients, were erected by the ancient Greeks in honor of their gods. The temple of Apollo at Delphi was the most famous of these monuments, and the temple of Zeus at Olympia was the most important. The temple of Hera, at Eleusis, was also very famous.

The temple of Athena at Pergamum was one of the most magnificent buildings of its kind, and the temple of Artemis at Ephesus was another famous monument. The temple of Minerva at Carthage was also famous, and the temple of Dionysus at Athens was another important building.

The temple of Jupiter at Rome was one of the most famous of its kind, and the temple of Venus at Vicenza was another famous monument. The temple of Vulcan at Mantua was also famous, and the temple of Neptune at Naples was another important building.

The temple of Minerva at Alba Longa was one of the most famous of its kind, and the temple of Apollo at Corinth was another important building. The temple of Fortuna at Rome was also famous, and the temple of Ceres at Tarentum was another important building.

The temple of Diana at Ephesus was one of the most magnificent buildings of its kind, and the temple of Bacchus at Carthage was another famous monument. The temple of Jupiter at Rome was also famous, and the temple of Apollo at Corinth was another important building.

The temple of Minerva at Alba Longa was one of the most famous of its kind, and the temple of Apollo at Corinth was another important building. The temple of Fortuna at Rome was also famous, and the temple of Ceres at Tarentum was another important building.
TROY.

siege promised little hopes of succors; the Greeks being unacquainted with any military engines fitted to make an impression on the Trojan walls. With such a numerous army, they might have converted the siege into a blockade; but scarcity of supplies compelled the greater part of them to quit the camp. The refoule of ravaging the adjacent country soon exhausted itself. Many betook themselves to cultivating the rich vales of the Chersonesus, whose indulgent inhabitants had recently been expelled, or destroyed, by the fierce incursions of the barbarous Thracians. Others had recourse to piracy, scouring the neighbouring seas, ravaging the unprotected coasts of the Hellespont and Ægean, and plundered or demolished such unfortified places as acknowledged the dominion, or afflicted the arms of Troy. These ravages excited the rage of the Achaians, and rendered them more hearty in the caufe of their confederates. In this manner nine summers and winters elapsed, without affording the nearer prospect of a decision to the confest; but, in the tenth year of the war, the feeming misfortunes of the Greeks precipitated the downfall of the proud city of Priam. A dreadful pestilence invaded the camp of the besiegers, and long continued to rage with unabating fury. This calamity was followed by the well-known quarrel between Agamemnon and Achilles, which deprived the Grecian army of its principal strength and ornament. The Trojans derived new spirits from the misfortunes of their enemies; they ventured to abandon the protection of their walls, boldly affailed the Grecian camp, and rifked several engagements, in most of which they were victorious. In the laft of theft, the beloved friend of Achilles was slain by the arm of Hector, the bravest and molt generous of the Trojan race. This event, which was infinitely more dreadful than death to the affectionate ardour of the Grecian chief, rifed his hitherto inexorable reftament against the proud tyranny of Agamemnon. His return to the camp restored the declining fortune of the Greeks; and the indignant furv of his rage was quenched in the detefted blood of Hector, whose patriotic valour had long been the firmest bulwark of his father's kingdom. The destruction of Troy soon followed the death of her darling hero. The city, whether taken by florm or by surprife, was set on fire in the night; most of the citizens perished by the sword, or were dragged into captivity; and only a miserable remnant escaped through the confufed horror of raging flames and expiring kifsen.

The burning of Troy happened eleven hundred and eighty-four years before the Christian era. Neither the city nor territory ever anew, in any succeeding age, the dignity of independent government. The sea-coast was planted, eighty years after the Trojan war, by new colonies from Greece; and the inland parts submitted to the growing power of the Lydians, whose arms overspread and conquered all the finest provinces of Lesser Asia.

The Greeks had recovered possession of the admired beauty of Helen; they had taken complete vengeance on the family and nation of her unhappy seducer; but the misfortunes which were the natural confequence of the Trojan expedition, left them little reafon to boast of their victory. Of five Boeotian commanders, only one remained, and the fiege had been proportionately fatal to the leaders of other tribes, as well as to their warlike followers. Thofe who lived to divide the rich spoils of Troy, were impatient to fet fail with their newly-acquired treafure, notwithstanding the threatening appearance of the fikes. Many of them perihed by shipwreck; the reft were long tufhed on unknown feas; and when they expected to find in their native country the end of their calamities, they were exposed to fuffer greater calamities there, than any which they had yet endured. The thrones of feveral of the abfent princes had been usurped by violence and ambition; the lands of various communities had been occupied by the invasion of blowfif tribes; even the least unfortunate of those adventurers found their domains uncultivated, or their territories laid waste; their families torn by discord, or their cities shaken by fedition. And thus the moft celebrated enterprise of combined Greece tended to plunge that delightful and once happy country into barbarism and misery. Gillies's Hist. of Anc. Greece, vol. i.

All the Roman writers affure us that Æneas fettled in Italy, and there founded the kingdom of Alba. From him the Cæsars affected to derive their pedigree. Livy alone feems to betray fome fort of doubt as to this particular, in- fluating, with a great deal of referees, that he has not fufficient grounds either to admit or reject the common opinion. But, notwithstanding the unanimous consent of the Latins, there are not wanting arguments of great weight, which the learned Bochart has carefully collected, to prove the arrival of Æneas in Italy to be a mere fable.

Dr. Gillies having carefully examined the evidence given by Bochart (Epift. num Æneas unquam fuit in Italia), and by Mr. Wood (Eflay on the original Genius of Homer), to prove that the defcendants of Æneas reigned in Troy, observes, that notwithstanding the learned ingenuity of a profound, and the plausible arguments of an elegant fcholar, the matter feems ftill too doubtful to warrant contradicting the popular opinion. Some few writers, both ancient and modern, have regarded Homer's account of the siefe of Troy as a mere fiction, or the refult of a poetical imagination. Thus Dion Chrysifollon (Orat. xi.) attempts to prove that the siege and defeftion of Troy by the Greeks is altogether fabulous, and deftitute of any foundation in truth. But his performance has been generally regarded as a mere jeu d'esprit, since the author elsewhere (πίστις ἀκρίβειας, p. 229) disproves that he endeavours to establish in the place before cited. Indeed the siege and capture of Troy are tranafions so well attested, and form so remarkable an epocha in history, that they cannot be justly questioned. Nevertheless the learned Bryant, not long ago, published two pamphlets with a view of refuting the generally received opinions respecting the eXistence of Asiuic Troy, and the authenticity of the leading facts in the history of the Trojan war: but his arguments and conclusions have been examined, and, in our opinion, satisfactorily refuted, by Mr. G. Wakefield, in his "Letters to Jacob Bryant, Esq. concerning his Difertation on the War of Troy," and J. B. S. Morritt, eq. in his "Vindication of Homer, and of the ancient Poets and Historians, who have recorded the Siege and Fall of Troy," as well as the testimonies of Le Chevalier, and other modern travellers. See Olivier's Travels in the Ottoman Empire, &c.

TROY, Epochia of the Destruction of. See EPOCHA.

TROY, FRANCIS DE, in Biography, was born at Toulouse in 1645. He was the son of Nicolas de Troy, a paitener of little celebrity, from whom he received the firit rudiments of design; but he was fent to Paris when young, where he acquired the finefl rudiments of painting, and became a member of the Academy in 1674. He afterwards attached himself to the more lucrative profession of portrait painting, and became celebrated in that line. He was flent by Louis XIV. to the court of Munich, to paint the portrait of Maria-Christiana of Bavaria, afterwards dauphine of France. His own portrait is placed in the gallery of Florence. Among the historical pictures which he produced, one of the most renowned was painted for the church of St. Genevieve, in which the magnificats of Paris were represented in voicing that faint. He died at Paris in 1730.
TROY, John de, was the son of Francis, and born at Paris in 1676. After receiving the instruction of his father in the art of painting until he had made considerable progress, he travelled to Italy, where he studied some years, and soon after his return to Paris he was made a member of the Academy. He was employed by Louis XIV., for whom he painted a series of cartoons for tapestry, representing the history of Esther; and several large allegorical subjects for the Hotel de Ville. The king appointed him director of the French Academy at Rome, where he resided great part of his life; and he acquired himself in the administration of his office in a most respectable manner. His majesty conferred upon him the order of St. Michael, and honoured him with other marks of his particular esteem. He was not less distinguished as a painter of portraits than of history. He died in 1752, aged 76.

Troy, in Geography, a post-township, the capital of Rensselaer county, on the E. bank of the Hudson, six miles above Albany; bounded N. by Lansingburgh, E. by Brunswick, S. by Greenbush, W. by the Hudson, or the county of Albany. The flourishing village of Troy is in this township, from which it has its name. Along the river are extensive flats, and the river-hill is mostly arable. In the S. where the hills approach nearest the river, are some fine streams for mills, and falls of a great height. There are few places on the Hudson, of the same area, that combine more advantages for a populous town. The soil is good, and here are excellent facilities for water-works; and near the head of sloop-navigation on one of the best rivers in America. In 1818, the whole population was 3895, including 89 slaves, and the number of electors was 334.

The village of Troy is agreeably situated on a gravelly plain, on the E. bank of the Hudson, six miles N. of Albany; it is regularly laid out in streets and squares, and contains 660 houses and stores, five places of worship, two banks, the court-house and prison for the county, a market-house, and many other buildings. Many of the houses, though built of wood, are large and elegant, and those of brick form a considerable number of the whole. The streets are wide, with sufficient side-walks, but unpaved. River-street, the principal avenue, extends about a mile along the river, and receives all the other streets that run N. and S. as well as E. and W. in right lines, forming the rear space into perfect squares, and the straight streets are fifty feet wide. The manufactures are considerable, and trade is extensive, as it employs a great number of floors, &c. on the Hudson. In wealth and trade Troy takes the third rank in the state, among its populous towns. The places of worship belong to the Presbyterians, Baptists, Episcopalians, Quakers, and Methodists: and here are several school-houses, as well as two banks, with an aggregate capital of $500,000 dollars. The River-hill, that rises in the rear of Troy, is very appropriately called mount Ida, and its fine sides and summits present elegant sites for building that command an extensive view of Troy and the surrounding country. Troy was incorporated in 1801, and is governed by a president and several trustees.

Troy, a town of Massachusetts, in the county of Bristol, containing 1296 inhabitants.—Alto, a town of Vermont, in the county of Orleans, containing 23 inhabitants.—Allo, a town of the county of Athena, in the district of Ohio, containing 778 inhabitants.—Alto, a township of Tumult county, in the district of Ohio, containing 239 inhabitants.

Troy, White, White of Orleans, or Spanish White, is a name given to a preparation of chalk, which is finely powdered, formed into cakes, and used in the arts. This chalk is found in great abundance at a village called Villeloup, about four leagues from Troyes in France. It is dug out of the earth in small lumps, and after having been exposed to the air, is bruised and reduced into a gross powder, which is puffed through a sieve: when it is perfectly dry, it is diluted with soft water, and formed into a kind of paste, which, being well tempered, is ground very fine in a mill, and used by painters, gilders, &c.: the qualities that particularly recommend that substance are, its being very white, friable, and free from all mixture of adventitious earth and florne. The white of Orleans is prepared at Cavereau, a small village about nine leagues from Orleans, and is reckoned inferior in value to the former. Mem. Acad. Sc. 1754. Ephemeris. Troyennes, an. 1759.

The artificial Troy white, called also Spanish white, is chalk neutralized by the addition of water in which alum is dissolved, and afterwards washed over. It is used by some in water-colours as a white, and may be thus prepared: Take a pound of chalk, and soak it well in water; then wash over all the fine part; and having poured off the first water, add another quantity, in which two ounces of alum are dissolved. Let them stand for a day or two, stirring the chalk once in six or eight hours: wash the chalk again over, till it be rendered perfectly fine, and pour off as much of the water as can be separated from the chalk by that means, taking off the remainder of the dissolved alum, by several renewed quantities of fresh water. After the last water is poured off, put the chalk into a cullender-filter, with a linen cloth over the paper; and, when the moister has been sufficiently drained off from it, lay it out in lumps to dry on a proper board. Handm. to the Arts, vol. i. p. 137.

TROY Weight, anciently called Trone Weight. See Weight.

TROY Pound. See Weight.

TROYES, in Geography, a city of France, and capital of the department of the Aube, on the Seine: before the revolution the capital of Champagne, and the seat of a bishop. It contained fourteen churches, four abbeys, ten convents, a college, and an hospital. The inhabitants carry on a considerable trade in linen, flax, hemp, cotton, fustians, &c. The environs produce grain, legumes, and fruit in abundance; 18 posts N.W. of Dijon. N. lat. 48° 18'. E. long. 4° 10'.

TRSCHITZ, a town of Moravia, in the circle of Olmutz; 10 miles S.S.E. of Olmutz.

TRSEBON. See Wittgenau.

TRSEMESCHNO, a town of the duchy of Warsaw; 10 miles S.E. of Gnefna.

TRUCE, TRENGA, a suspension of arms; or a cession of hostilities between two parties at war, which does not terminate it, but merely suspends its operations.

The word, according to Menage, &c. comes from the Latin trenga, which signifies the name; and which Caenenge derives further, from the German trure, or truce, which signifies truth.

A truce is either particular or universal: by the former, hostilities cease in particular places, as between a town and a besieging army; by the latter, they are to cease generally, and in all places between the belligerent powers. Particular truces may also admit of a distinction with regard to the acts of hostility, or to the persons; that is, it may be agreed to abate for a time from certain hostilities, or two armies may conclude a truce, or suspension of arms, without respect to place. A general truce made for many years, differs from a peace in little else than in leaving the original question of the war undecided, as they found it.

Accordingly
Accordingly, truces are frequently concluded between princes, in order to come to a peace; and truces of many years serve in lieu of treaties of peace between princes, whose differences cannot be finally adjusted.

All truces and pacts of arms are concluded by the authority of the sovereign, who commits some of them to his own immediate person, and to others through the ministry of his generals and officers. The truce binds the contracting parties from the moment of its being concluded; but cannot have the force of a law with regard to subjects on both sides, till it has been solemnly proclaimed. A ship being on the open seas at the time of publishing the truce, meets with a ship of the enemy, and sinks her; as in this case there is no guilt, the ship is not liable to any damage. If the ship has made a capture of the vessel, all the obligation she lies under is to restore it, as not retainable by the truce.

If one of the contracting parties, or any person by his order, or with his consent only, commit any act contrary to the truce, it is an injury to the other contracting party; the truce is dissolved, and the party offended is entitled to take up arms, not only for renewing the operations of the war, but also for revenging the recent injury offered it.

Sometimes a penalty on the infractor of the truce is reciprocally stipulated, and then the truce is not immediately broken on the first infringement; if the party offending submits to the penalty, and repairs the damage, the truce subsists, and the party offended has nothing farther to claim. If an alternative has been settled, that in case of infringement the delinquent shall suffer a certain penalty, or the truce be broken, the party injured may chuse whether he will demand the penalty, or make use of his right to take up arms again.

The time of the truce should be well specified in order to prevent any doubt or dispute from the moment of its beginning to its period. If no term has been specified for the commencement of the truce, as it binds the contracting parties immediately upon its conclusion, it concerns them to cause it to be published immediately, in order to the observance of it; for it becomes binding on the subjects only from the time of its proper publication; and it begins to take effect only from the moment of its publication, unless the agreement be otherwise. The rules that concern a truce during its continuance are such as follow: Each party may do, within its own territories, what it has a right of doing in time of full peace: advantage is not to be taken of doing what could not be done during the hostilities, e.g. continuing the works of a siege, or repairing breaches, and introducing succours. Nothing is to be undertaken in confined places while the truce continues, but every thing is to be left as it was; e.g. if the enemy does not relinquish a port, town, or village, the truce forbids an invasion of it: subjects inclined to revolt against their prince are not to be entertained, much less incited to treason; persons or effects of enemies are not to be seized during the truce. Intercourses may be allowed during a truce. At the expiration of the truce the war is renewed without any fresh declaration. See Vattel’s Law of Nations, book iii. ch. 10.

Truce of God, Tréve de Dieu, is a phrase familiar in the histories of the eleventh century, when the disorders and licences of private wars between lords and families obliged the bishops of France to forbid such violence within certain times, under canonical pain.

Those intervals they called tréve de Dieu, truce de Dieu, q. d. truce of God, a phrase frequent in the councils since that time. The first regulation of this kind, was in a synod held in the diocese of Eliso in Rouffillon, anno 1072, where it was enacted, that, throughout that country, no person should attack his enemy from the hour of none on Saturday, to that of prime on Monday, that Sunday might have its proper honour; that nobody should attack, at any time, a religious priest walking unarmed, nor any person going to church, or returning from the same, or walking with women; that nobody should attack a church, or any house within thirty paces around it. The whole under penalty of excommunication, which, at the end of three months, was converted into an anathema.

These quarrels had prevailed even in the time of Charlemagne, and much more after his death; so that the church found it necessary to interpose. The most early of these interpositions, now extant, is towards the end of the tenth century.

In 990, several bishops assembled in the south of France, and published regulations to restrain the violence and frequency of private wars, ordaining that the transgressor should be excluded from all Christian privileges during his life, and be denied Christian burial after his death. To the same purpose a council was held at Limoges, A.D. 994, and several other councils issued their decrees for restraining the evil. But the authority of councils was insufficient; and, therefore, a bishop of Aquitaine, A.D. 1032, pretended that an angel from heaven had appeared to him with a writing, enjoining men to cease from their hostilities, and be reconciled to each other. Accordingly, a general cessation took place, and lasted for seven years; and a resolution was formed, that no man should attack or molest his adversaries from the evening of Thursday in each week, to the morning of Monday in the week ensuing, the intervening days being peculiarly holy; our Saviour’s passion having happened on one of them, and his resurrection on another. This sudden change was considered as miraculous, and the respite from hostilities subsequent to it was called the true of God.

This from being a regulation in one kingdom became a general law in Christendom, and was confirmed by the authority of the pope, and the violators were subjected to the penalty of excommunication. The council of Toulouges in Rouffillon, A.D. 1041, issued an act, containing all the stipulations required by the truce of God. The nobles, however, disregarding the truce, pursuaded their quarrels without interruption. Toward the end of the twelfth century, a new revelation was pretended, and, in consequence of it, an association formed under the title of the “Brotherhood of God.” At length Philip Augustus, or St. Louis, published an ordinance, A.D. 1245, prohibiting any person to commence hostilities within forty days after the offence which caused the quarrel, and the transgressor was to be tried and punished by the judge as a traitor. This was called the royal truce, and the regulation was productive of good effects. This was further enforced by an ordinance of Philip the Fair, A.D. 1296. See Robertson’s Hist of Charles V. vol. i. p. 335, &c. 8vo.

Truce, Breaking of. See Passport.

Truce, Convenor of. See Conservator.

TRUCHMAN, Dragoman, or Dragman, in the countries of the Levant, an interpreter.

TRUCHMENIANS, or ancient Turkmants, called by the Russians Turkmenian Tartars, are those tribes whose parent stock still nomadizes on the eastern coasts of the Caspian, where their territory extends as far as the lake Aral and Persia. The Truchmennians, in particular, posses on the western side of the Caspian that part of the Caucasian mountains
mountains which stretches from that sea as far as the province Kakhett in of the Georgian state. The generality of the districts have their own common princes; others form particular states, and some are under foreign sovereignty. In the former half of the 18th century a part of these hordes fell under the yoke of the Torgotan prince Ayuka, and on that occasion many Truchmenian families withdrew to the Tartars of Orenburg, Ufa, and Astrakhan. In the year 1770, the remainder of these people, who had not been before under the dominion of the Kalumus, set themselves at liberty, and at present nomadise as free subjects of the Russian empire about the mouth of the Kama. Their number is continually increasing by such as escape from the Kirghizes, and are found though singly among the Tartars of Orenburg and Ufa, yet to no small amount. See Turkomans.

TRUCHTERSHEIM, in Geography, a town of France, in the department of the Lower Rhine; 7 miles W. of Strasbourg.

TRUCKING, in Commerce. See Permutation, Exchange, and Commerce.

TRUCKS, in a Ship, pieces of wood of various shapes, and used for different purposes. Carriage-trucks are cylinders, the breadth or thickness of which is always equal to that of the fide-pieces; but the height of the fide-pieces and diameter of the truck must always depend upon the height of the gun-ports above the deck. Flag-flags-trucks are circular flat pieces of elm, with a small scavage at least on each side. They are fixed by a mortice upon the upper end of flag-flaps, and are used to receive the halels. Parrel-trucks are round balls of elm, or other wood, and have a hole through the middle, in which a rope is reeved, to form the parrels. Seizing-trucks are similar to parrel-trucks, but have a score round the middle, to admit a seizing. They are used to lead ropes through. Shroud-trucks are short cylindrical pieces of elm, &c.; they have a hole through the middle, lengthways, a groove down the side the fize of the shrouds, and a score round the middle to admit a seizing. They are fized to the shrouds to lead ropes through, that they may be more readily found. Vane-trucks are small ornamental pieces of wood like an acorn, &c. and are fixed on the uppermost point of the spindle, above the vane on the mast-head. Their use is to prevent the vane’s unshipping.

Trucks, among Gunners, round pieces of wood, in form of wheels, fixed on the axle-trrees of carriages, to move the ordnance at sea, and sometimes also at land. See Carriage.

Trucks are also a very large kind of wheel-barrows, with high wheels moving on planks, used for conveying stuff down a flight declivity in digging canals.

Truck-Barrows are used in rope-making of different fizes; they have three wheels, and are used to take hauls of yarn from the yarn-house, and remnants of yarn, coils of rope, &c. from the ground to the rope-house.

TRUDENAU, in Geography, a town of Pommeria; 9 miles S.E. of Dantizck.

TRUE, something agreeable to the reality of things, or to truth.

In this sense we say, the true God, the true religion, true gold, &c. in opposition to false or pretended ones.


True Place of a Planet, or Star, in Astronomy. See Place.

True Altitude, Anomaly, Asphm, Horizon, Propofition, Recovery, Ribs, and Suture. See the several articles.

TRUENTUS, Tronto, or Otranto, in Ancient Geography, a river of Italy, in the southern part of P台词, which passed by Asculum. At its mouth was a fortified place called "Castrum Truentinum."

TRUFFLES, formed from truffle, or truffle, of the Latin tuber, or tuberculum, tabula terre, in Natural History, a sort of subterraneous vegetable production, or a kind of mushroom, the characters of which are these: they are of a fungous fleshy ftructure, and are of a roundish figure, growing sometimes single, sometimes many together, and always remaining under ground. See Tuber.

Bradley calls them under-ground edible mushrooms, or Spanish trubbes, and under-ground deer's-balls, or mushrooms.

The ancients, it is evident from their writings, were not acquainted with the sort of truffles which we have in use at present; they describe theirs to have been of a reddish colour, and smooth on the surface; we at present know this kind very well; it is common in Italy, and is called the wild truffle, and disregarded. They had indeed the white African truffle, sometimes brought to them, and held it in great esteem for its flavour. The Romans called it the Lybian tuber, and the Greeks the Cyrenian misy.

Avicenna recommends those truffles as the best, which were of a whitish colour within; and this not being a clear white, he expresseth himself by a word which signifies fand-coloured, alluding to dusky-white sand, in common use at that time.

It is certain that the finest truffles were called by some authors by this epithet arenofs, with a very different meaning, only expressing that they were produced in sandy countries; the European truffles both then and now are, mostly produced in dry ground on the fides of hills; but the Lybian were produced only in the burning sands of that country, and these were therefore called sand-truffles. Serapio tells us, that the belft of all truffles were those produced in sand; and Martial alludes to these, where he describes the finest truffles as breaking the surface of the earth into cracks, and by that means directing people where to search for them. To which purpose Leo Africanus says of the Lybian truffle, that the places where they are may be known by the earth’s being railed into hillocks, and breaking into numerous cracks.

The truffle is most abundantly produced in dry fields of a reddish loamy earth, not too poor, according to Pliny, chiefly after rains and thunders in autumn; and they are found to flourish most near the roots of elms, the ilex, and some other trees. They do not well bear the severity of hard winters, but are usually scarce all the seafon after fuch. The smallest are found about the bignefs of a pea, reddish without and whitish within, and they grow from this fize sometimes to a pound weight, but fuch are not common; what are taken up in the spring are diftinguifhed by their white colour and infipidity to the taste, and are commonly called white truffles; those taken up in autumn are of a variegated colour within, and are called marble truffles; the inner fubflance having swelled extremely and changed colour, and the white part now remaining only in form of a number of pipes or tubules, which feem in many places to run to the extremity, and terminate in the chaps and wrinkles of the back. The greyfih fubflance, which is wrapped up among these tubules, when examined by the microscope, appears to be a transparent parenchyma, composed of little bladders or hollow veffels, in the midft of which may be seen fmall round bodies, which are unquestionably the feeds of the truffle.
What confirms the opinion of their coming from feed is, that there have been truffles discovered in England, and this, at first, only in Northamptonshire, and even only in one place of it, viz. Ruthton, a place flocked with trees formerly brought from Languedoc; and it is only since then, that any truffles have been there observed; whence it is concluded, that the feed of these truffles was brought from France among the roots of the trees brought thence.

These English truffles were first discovered by Dr. Hatton. Dr. Tancred Robinson affirms us, they are the true French truffles, the Italian tortuffi, or tortufoli, and the Spanish turmas de tierra, being not before noted by Mr. Ray as ever known on English ground: he adds, that he has found them thrice at large at Florence, Rome, &c.

Those observed in England are all included in a studded bark or coat, and the inner substance is of the consistence of the fleshly part of a young chefnt, of a palte-colour, a rank or hircine smell, and unfavourably.

When the truffles are arrived at such a degree of maturity as to yield feeds, which is generally in August, they are of a fine high flavour and agreeable smell; and the heat and rains at this season greatly promoting their growth, has been the occasion of the old error, that thunder produced them; after this they continue good till the middle of winter, and sometimes even till March; but those gathered from this time till the end of July are small, and only white, never marbled, nor of their high taste.

If the truffles are not taken up when fully ripe, they always rot and burst; whence it is plain, that they are an annual plant, which lives no longer than till they have perfected their feeds. And if the place where the old ones have rotted and burst be examined, the seeds will be found after some time to have vegetated, and a great number of young truffles to be produced in the place: these, if not destroyed by the frosts, are what in the ensuing spring furnish the younger white truffles.

The truffle is very apt to be pierced and eaten within by a worm, and this, though a damage to the particular truffle, is of some service to the people who make it their business to seek for them: for this worm, after a proper time passed in that state, changes into a chrysalis state in the body of the truffle; whence he soon after comes out, in the shape of a beautiful violet-coloured fly; and wherever these flies are found, they are an indication that there are beds of truffles near, as they are never bred in any other root.

These communicate a bitterness to the whole truffle, and make it unfit for the table; though if the whole be carefully searched into, the part eaten by the worm, and the hole by which it made its way in, will be found to be in reality the only bitter parts, and the rest of the truffle, when these are cut out, as good as ever: but, besides these destroyers, the microscope usually discovers on the surface of the truffle a multitude of other devourers, which are small animalcules, continually eating, and searching the cracks of the bark, as the places where the pulp is most easily come at; these somewhat resemble mites.

The earth that produces truffles rarely affords any other plants, these taking up all the nourishment it can afford: the earth all about them smells very strongly of them, that they are easily found out by it, by the animals which carry their noses near the ground; and those who sought after them soon found the way of using hogs to search them out; but these being a sort of unmanageable animals, dogs were found which would supply their place with more certainty, and much less trouble. Mem. Acad. Scien. Paris, an. 1771.

By a chemical analysis, truffles are found to abound in a volatile alkali salt, mixed with oil, upon which their smell, &c. depend. They never rise out of the ground, but are found, usually, half a foot beneath the surface of it.

Dr. Hatton has observed several little fibres issuing out of some truffles, and infusing themselves within the soil, which, in all probability, do the office of roots. The truffles grow tolerably globular, as receiving their nourishment all around them; which they suck in through the pores of their bark or rind.

They are tenderest and best in the spring, though easiest found in autumn; the wet swelling them, and the thunder and lightning disfiguring them to send forth their scent, so alluring to the swine: hence some of the ancients called them ceramia, q. d. thunder-roots.

The ancients were exceedingly divided as to the use of truffles; some affirming them to be wholesome food, and others pernicious: Avicenna, particularly, will have them to cause apoplexies. For my own part, says M. Lemery, I am of opinion, they have both good and evil effects: they restore and strengthen the stomach, promote the fermen, &c.; but when used too freely, they attenuate and divide the juices immediately, and, by some volatile and exalted principles, occasion great fermentations, &c. though the pepper and salt, with which they are ordinarily eaten, do doubtless contribute greatly to these effects: their rich taste is owing to their not putting forth any fault; in effect, their principles being united, and, as it were, concentrated into a little bulb, must yield a richer and more delicious flavour than if the juices were dispersed by vegetation through the several parts of the common plant. Some count truffles under saffrons, and others mix them in saucis.

In Italy, France, England, &c. they eat them as a great dainty, either in fried slices, with oil, salt, and pepper, or boiled thoroughly in their own broth. The hogs are exceedingly fond of them, and are frequently the means of discovering the places where they are; whence the common people call them fuisse-bread. See MISV. and UPSON.

TRUFFLE-WORMS, a species of fly-worm which is found in truffles, and lives in and feeds on them, till the time it undergoes the common metamorphosis of these creatures, for the production of a fly, like that from the egg of which it was hatched.

They are very small, and have two brown spots, easily distinguishable near their hinder end, which are the two posterior ommata. They are all over white, and very transparent; and may very easily distinguish the two black stalks of their two hooks, with which they tear the substance of the truffle, as the other species do their food: when they have arrived at their full growth, which is usually in a few days, then they leave the truffle, and go to seek some proper place, where they may rest during the time of their transformation; they enter the earth for this purpose, and twelve hours after they have gone into it they are transformed into an egg-shaped shell, of a chefnt-brown, of the same fort with that of the blue flesh-fly.

These are the worms in a manner peculiar to the truffles; but, besides these, they, often furnish nourishment to another species, very common in mushrooms of the ordinary cultivated kind, and which has a yellow body, and a black crustaceous head. Reaumur’s Hist. Inf. vol. IV. p. 374.

TRUFTLORN, in Geography, a town of Bavaria; 13 miles S.S.W. of Vilhofen.

TRUG, or Trug-Corn, Truga Frumenti, in our Antient Cufpons, denotes a measure of wheat. "Tres trug frumenti vel avenæ faciant due buhlers, inter præbendam de Hunderton ecclesia Heref." Ms. de Temp. E. III.

At Lempster, the vicar has trug-corn allowed him for officiating.
TRU

officiating at some chapels of ease; as Stoke and Dockley, within that parish.

TRUC, is also a country word for a milk-tray, or hod to carry mortar in.

TRUHTCHEVSK, in Geography, a town of Ruffia, in the government of Orel, on the Dclina; 80 miles W.S.W. of Orel. N. lat. 52° 35'. E. long. 33° 34'.

TRULLIZATION, in the Ancient Architecture, the art of laying on slats or layers of mortar, gypsum, or the like, with the trowel, in the inside of vaults, ceilings, &c.

TRULLO, in Geography, a small island on the east side of the gulf of Bothnia. N. lat. 63° 54'. E. long. 27°.

TRULLUM, a barbarous word, formed from trulla, cap, and signifying dome; chiefly used in the phrase, council in trullo.

This was a council assembled, in the year 692, against the Monothelites, in the dome of the palace of Constantinople. called trullum; the name of which it has retained. It was also called the quinquextum.

The trullum was properly a hall in the palace of the emperors of Constantinople, where they usually confined of matters of State. This council, held in trullo, was the sixth ecumenical or general council.

TRUMAU, in Geography, a town of Austria; 5 miles E. of Baden.

TRUMBULL, a county of the district of Ohio, bordering on lake Erie, and containing 19 townships and 8671 inhabitants.—Also, a post-town of Connecticut, in the county of Fairfield, containing 1241 inhabitants; 156 miles N.E. of Philadelphia.

TRUMENAU, a town of Prussia, in Oberland; 16 miles S.E. of Marienwerder.

TRUMAN, a town of Hindoostan, in Maravar; 40 miles S.W. of Tanjore. N. lat. 10° 15'. E. long. 78° 45'.

TRUMP, in Ichthyology, a name given by some of the English writers to that species of whale, called by the generality of authors cetes, and balaena major. This is the physeter micros of Linneus, or blunt-headed cachalot. The Dutch call it the pot-whale fis.

TRUMPET, a musical instrument, the most noble of all portable ones of the wind-kind; used chiefly in war, among the cavalry, to direct them in the service. Each troop of cavalry has one. The cords of the trumpet are of crimson, mixed with the colours of the facings of the regiment.

The word is formed from the French trompette. Menage derivates it from the Greek τρομπητα, turbo, a shell anciently used for a trumpet. Du-Cange derivates it from the corrupt Latin trumpa, or the Italian tromba, or trombetta; others from the Celtic trampil, which signifies the same. It is usually made of brass, sometimes of silver, iron, tin, and even wood. Mofes, we read, made two of silver, to be used by the priests (Numb. x.); and Solomon made two hundred like those of Mofes, as we are informed by Josephus (lib. viii.); which shews abundantly the antiquity of that instrument.

As to the invention of the trumpet, some Greek historians ascribe it to the Tyrrhenians; but others, with greater probability, to the Egyptians, from whom it might have been transmitted to the Israelites. The trumpet was not in use among the Greeks at the time of the Trojan war; though it was in common use in the time of Homer. According to Potter (Arch. Grac. vol ii. cap. 9.), before the invention of trumpets, the first signals of battle in primitive wars were lighted torches; to these succeeded shells of fishes, which were founded like trumpets. And when the trumpet became common in military use, it may well be imagined to have served at first only as a rough and noisy signal of battle, like that at present in Abyssinia and New Zealand, and perhaps with only one found. But even when more notes were produced from it, so noisy an instrument must have been an unfit accompaniment for the voice and poetry; so that it is probable the trumpet was the first solo instrument in use among the ancients.

In the 96th Olympiad, before Christ 396, a prize was instituted at the Olympic games for the best performer on the trumpet; and the first person who gained the prize was Timaeus of Elis; and Herodotus of Megara, a famous trumpeter, who lived about the 120th Olympiad, or 300 years before Christ, was victor at the different games of Greece no less than ten, or, as some say, fifteen several times. These performers on the trumpet appear to have been heralds and public criers, who not only gave the signals at the games for the combatants to engage, and announced their successes, but proclaimed peace and war, and sounded signals of sacrifice and solemnities, at religious ceremonies. Burney's Hist. of Mus. vol. i, p. 376.

Among the Romans, there were various instruments of the trumpet kind: as the tuba, cornua, bucina, and litus. The tuba is supposed to have been exactly like our trumpet, widening gradually in a direct line to the orifice; the cornua was bended almost round; and the bucina was somewhat lopsided. The litius, which was almost rightangled, but crooked at the extremity, in the form of the auricular staff, whose name was, a species of clarion, or octave trumpet, made of metal, and extremely loud and thrilling, used for horse, as the straight trumpet was for foot. Horse-distinguishes it from the tuba or trumpet. See Litus.

The tuba, or long trumpet, called by the Hebrews the trumpet of the public, may be seen in several pieces of ancient sculpture at Rome, particularly on the arch of Titius, on Trajan's pillar, and in a baso-relievo at the Capitol, representing the triumph of Marcus Aurelius.

The modern trumpet consists of a mouth-piece, an inch broad, though the bottom be only one-third so much. The pieces which convey the wind are called the brasses; the two places where it is bent, potence; and the canal between the second bend and the extremity, the pavilion; the places where the branches take a sudden, or are folded, the knots; which are five in number, and cover the joints.

If an ellipse (says Dr. Young, Lecture xxxi.) be prolonged without limit, it will become a parabola: hence a parabola is the proper form of the section of a tube, calculated for collecting a found which proceeds from a great distance, into a single point, or for carrying a found nearly in parallel directions to a very distant place. It appears, therefore, that a parabolic conoid is the best form for a hearing-trumpet, and for a speaking-trumpet; but for both purposes the parabola ought to be much elongated, and to consist of a portion of the conoid remote from the vertex; for it is requisite, in order to avoid confusion, that the found should enter the ear in directions confined within certain limits: the voice proceeds also from the mouth without any very considerable divergence, so that the parts of the curve behind the focus would in both cafes be wholly useless. A trumpet of such a shape does not very materially differ from a part of a cone; and conical instruments are found to answer sufficiently well for practice. It appears, however, unnecessary to fuppose, as Mr. Lambert has done, that they differ essentially in principle from parabolic trumpets. It is not yet perfectly decided whether or not a speaking-trumpet has any immediate effect in strengthening the voice, independently of the reflection of sound.
When the sound of the trumpet is well managed, it is of a great compass. Indeed its extent is not strictly determinable; since it reaches as high as the strength of the breath can force it. A good breath will carry it beyond four octaves, which is the limit of the usual keys of spinets and organs.

The usual sounds of the trumpet are represented by the following musical notes.

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Here the loudest sound being denoted by 1, the pitch of the ref, or the number of their respective vibrations, during the time that C vibrates once, will be expressed by the numbers denoting the order of their sounds, 2, 3, 4, 5, &c. The sounds expressed by the musical numbers, that is, by 2, 3, 5, and their composites, which are, 4, 6, 8, 9, 10, 12, 15, 16, are all perfectly in tune; but the sounds expressed by numbers not musical, as 7, 11, 13, 14, are false.

Three of these, viz. B♭, its octave, and A, distinguished by f placed over them, are too flat; and the remaining note F, marked with an S, is too sharp. See Musical Numbers.

The reason of which is, that B♭ ought to be a tone major below C: that is, its pitch to that of C will be as 8 to 9; but the proportion given by the trumpet is as 7 to 8; which being a less proportion than that of 8 to 9, follows that B♭ will be too flat. The same holds true of its octave.

And A being a tone minor above G, it ought to be to G as 10 to 9; but in the trumpet, it is to G as 13 to 12; which being less than the proportion of 10 to 9, it follows that A will be too flat. On the other hand, F ought to be a semitone major above E: that is, F ought to be to E as 16 to 15; but in the trumpet, F is to E as 11 to 10; which being a greater proportion than that of 16 to 15, it follows that F is too high or too sharp.

This system of trumpet-notes is an effectual confusion of those who are for introducing 7, 11, 13, and other primes into music.

In war there are eight principal manners of sounding the trumpet: the first, called the caracollet, used when an army approaches a city, or parries through it in a march. The second the bontefille, used when the army is to decamp, or march; at which time the drums beat a general, when the troopers boot, faddle, and get ready. The third is when they found to horse, when the amble begins to beat, on which the troopers mount; and then to the standard. The fourth is the charge, in the day of battle. The fifth the watch. The sixth is called the double caracollet. The seventh the chamade: and the eighth the retreat. Besides these, there are various flourishes, voluntary, &c. used in rejoicing.

There are also people who blow the trumpet so softly, and draw so delicate a sound from it, that it is used not only in church-music, but even in chamber-music; and it is on this account, that, in the Italian and German music, we frequently find parts entitled tromba prima, or 1a, first trumpet; tromba IIa, segonda IIIa, tenza, second, third trumpet, &c. as being intended to be played with trumpets.

There are two very great defects in the trumpet, observed by Mr. Roberts, in the Philological Transactions for 1692, No. 195. The first is, that it will only perform certain notes within its compass, commonly called trumpet-notes: the second, that though its ordinary compass is from double C-flat to C-flat in alt., yet there are four notes, the 7th, 11th, 13th, and 14th, in this progression, viz. B♭, f, a, and b♭, which are not exact in tune. The same defects are found in the trumpet-marine: and the reason is the same in both. Phil. Trans. Abr. vol. i. p. 667.

Trumpet-Marine, is a musical instrument, consisting of three tables, which form its triangular body. It has a very long neck with one single string, very thick, mounted on a bridge, which is firm on one side, but tremulous on the other. It is struck by a bow with one hand, and with the other the string is pressed or stopped on the neck by the thumb. Plate XXIV. Miscellany, fig. 4.

It is the trembling of the bridge, when struck, that makes it imitate the sound of a trumpet, which it does to that perfection, that it is scarcely possible to distinguish the one from the other. And this is what has given it the denomination of trumpet-marine, though, in propriety, it be a kind of monochord. Of the six divisions marked in the neck of the instrument; the first makes a fifth with the open chord, the second an octave, and so on for the rest, corresponding with the intervals of the military trumpet.

The trumpet-marine has the same defects with the trumpet, viz. that it performs none but trumpet-notes, and some of those either too flat or too sharp. This Mr. Fr. Roberts (ubi supra) accounts for, only premising the common observation of two unison strings; that if one be struck, the other will move; the impulses made on the air by one string setting another in motion, which lies in a disposition to have its vibrations synchronous to them; to which it may be added, that a firing will move, not only at the straining of an unison, but also of that of an 8th or 12th; there being no contrariety in the motions to hinder each other.

Now in the trumpet-marine you do not stop close, as in other instruments, but touch the string gently with your thumb, by which there is a mutual concurrence of the upper and lower parts of the string to produce the sound. Hence it is concluded, that the trumpet-marine yields no musical sound, but when the stop makes the upper part of the string an aliquot part of the remainder, and consequently of the whole; otherwise the vibrations of the parts will stop one another, and make a sound suitable to their motion, altogether confused. Now the aliquot parts, he shews, are the very stops which produce the trumpet-notes.

Trumpet, Harmonical, is an instrument which imitates the sound of a trumpet, and which resembles it in every thing, excepting that it is longer, and confounds of more branches. It is usually called a Jacob's.

Trumpet, Listening or Hearing, is an instrument invented by Joseph Landini, to afford the ear in hearing of persons who speak at a great distance, without the assistance of any speaking-trumpet.

Instruments of this kind, represented in Plate XXIV. Miscellany, fig. 5. and 6. are formed of hollow conical tubes from eight to sixteen inches in length, with a wide mouth from about two to four inches in diameter, and terminating in a small canal,
TRUMPET.

canal, whose aperture is not above one-fourth of an inch in diameter, which is applied to the ear. These tubes are often bent in a manner somewhat resembling the letter C, except that in general the small end is bent much less than the other. The construction of these instruments evidently shows how they contribute to affill the hearing; for the weak and languid pulses of the air being received by the large end of the tube, and reflected several times from its sides in passing to the small end, are condensed, and entering the ear in this condensed state, strike the tympanum with a greater force than they could have done without the intervention of the tube: the found is louder, but less distinct. Hence it appears, that a speaking-trumpet may be applied to the purpose of a hearing-trumpet, by turning the wide end towards the found, and putting the ear to the narrow end.

TRUMPET; Speaking, is a tube from six to fifteen feet long, made of copper or of tin allied-plates, perfectly straight, and with a very large aperture; the mouth-piece being big enough to receive both lips. The edge of the narrow end is generally covered with leather or cloth, in order that it may more effectually prevent the passage of any air between the trumpet and the face of the speaker. The mouth being applied to it, carries the voice to a very great distance, so that it may be heard distinctly a mile, or more; hence its use at sea. A person who is not in the direction of the trumpet will hear the sound of it both weaker and less distinctly, in proportion as he is more or less distant from the direction of the sound; which is the direction straight before the trumpet.

The words which are spoken through a speaking-trumpet may be heard much farther and louder, than not so distinctly, as without the trumpet.

A speaking-trumpet has also been applied to the mouth of a gun or pillar, by which means the explosion has been rendered audible at a vast distance. Such contrivances may be used as signals in certain cases.

The invention of this trumpet is held to be modern, and is commonly ascribed to Sir Samuel Moreland, who called it the tuba Stentorophonica.

Of this instrument an account was published at London in 1671, in a work entitled "Tuba Stentoro-phonica," in which the author relates several experiments made by him with this instrument; the result of which was, that a speaking-trumpet constructed by him, five feet six inches long, twenty-one inches diameter at the greater end, and two inches at the smaller, being tried at Deal castle, was heard at the distance of three miles, the wind blowing from the shore.

But Ath. Kircher seems to have a better title to the invention; for it is certain he had such an instrument before ever Sir S. Moreland thought of his.

Kircher, in his "Phonurgia Nova," published in 1673, says, that the tromba, published last year in England, he invented twenty-four years before, and published in his Mufurgia: he adds, that Jac. Albinus Ghibbifius, and Fr. Eschinardus, ascribe it to him; and that G. Scottus testifies of him, that he had such an instrument in his chamber in the Roman college, with which he could call to, and receive answers from the porter.

Indeed, considering how famed Alexander the Great's tube was, with which he used to speak to his army, and which might be distinctly heard a hundred stadia or fur- longs, it is somewhat strange the moderns should pretend to the invention; the Stentorophonic horn, or tube of Alexander, of which there is a figure preferred in the Vatican, being almost the same with that now in use. See STENTOROPHONIC.

The principle upon which this instrument is constructed is obvious: for as found is stronger in proportion to the density of the air, it must follow, that the voice passing through a tube or trumpet, must be greatly augmented by the conflat reflection and agitation of the air through the length of the tube, by which it is condensed, and its action on the external air greatly increased at its exit from the tube.

In a speaking-trumpet, the sound in one direction is supposed to be increased, not so much by its being prevented to spread all round, as by the reflection from the sides of the trumpet. But as the real action of the instrument, or the true motion of the air through it, is not clearly understood; different persons, according to their particular conceptions of the cause, have recommended peculiar shapes for the construction of such trumpets: some having recommended a conical shape, others that which is formed by the rotation of certain curves round their axes; others, again, have recommended an enlargement or two of the cavity in the length of the trumpet, &c. That which has been more commonly recommended as the bell figure for such trumpets, is generated by the rotation of a parabola about a line parallel to the axis.

In order to estimate the effect of this instrument, let us suppose A B (Plate XXIV. Mifcellany, fig. 7.) to be such a length of tube as admits of reflection of the found, emitted by the speaker, from the side B B; let A F be another length, in which the found or voice is reflected five times by the sides, viz. in B, C, D, E, and F: the found striking the metal tube in B is the same as that at F; but the number of parts forming the periphery of the circle in B is to that in F, as the diameter B B is to the diameter F F; and therefore the intensities with which the parts of the metal will be moved in these peripheries, will be in the inverse ratio of the peripheries, or of the diameters B B, F F. But the parts of the metal move the air contained within the peripheries of the circle, or constituting their respective areas, which are as the figures of the diameters: i.e. the air agitated in B is to that agitated in F, as B B to F F; and consequently, the intensity of the sound found in the tube of the length A B is to that in the length A F, as B B to F F; and the inverse ratio of the diameter B to F: or, the intensity in A B is to that in A F :: FF × BB²; BB × FF; i.e. dividing the last ratio by BB × FF :: BB: FF. But the intensity of the sound increases the more frequently it is reflected from the sides: let then the number of reflections of the found in B be n, in F it will be 5 n, and therefore the whole intensity of the found in B is to that in F as n × B B to 5 n × F F. Consequently, the longer the tube the more numerous will be the reflections, and the greater will be the increase of the found, and the farther it may be heard.

A man speaking through a tube four feet in length, may be understood at the distance of 500 geometrical paces; with a tube of 16 feet, at the distance of 1800 paces; and with a tube 24 feet long, at a greater distance than 2500 geometrical paces.

The found will be also heightened by having the remotest aperture of the tube wide, more than if it were narrow. However, the effect of the tube in magnifying found, either for speaking or hearing, depends principally upon its length: nevertheless some advantage may be derived from its particular form and shape.

Some have proposed the figure which is made by the revolution of a parabola about its axis, as the bell; where the mouth-piece is placed in the focus of the parabola, and conve-
consequently the sonorous rays will be reflected parallel to the axis of the tube. But Mr. Martin observes, that this parallel reflection is by no means essential to the magnifying of sound; on the contrary, it prevents the infinite number of reflections and reciprocations of sound, in which, according to Sir J. Newton, its augmentation principally consists: the augmentation of the impetus of the pulses of air being proportional to the number of repercussions from the sides of the tube, and therefore to its length, and to such a figure as is most productive of them. Hence he infers, that the parabolic trumpet is the most unit of any for this purpose.

He observes, that there is one thing more which contributes to the augmentation of the agitations of air in the tube; viz. the proportion which the several portions of air bear to each other when divided by transverse sections, at very small, but equal distances, from one end of the tube to the other.

Thus, let those several divisions be made at the points \( a, b, c, d, e, \&c. \) (fig. 8.) in which let the right lines \( ak, bl, cm, dn, \&c. \) be taken in geometrical proportion. Then will the portions of air contained between \( B a, a b, b c, c d, \&c. \) be nearly in the same proportion, as being in the same ratio with their bases, when the points of division are indefinitely near together. But it is known, that when any quantity of motion is communicated to a series of elastic bodies, it will receive the greatest augmentation when those bodies are in geometrical proportion. Therefore, since the force of the voice is impelled upon, and gradually propagated through a series of elastic portions of air in a geometrical ratio to each other, it will receive the greatest augmentation possible.

And since by construction \( B a = a b = b c = c d, \&c. \) and \( ak : bl : cm : dn, \&c. \) the points \( k, l, m, n, o, p, q, r, s, \&c. \) will form the logarithmic or logitic curve: whence Mr. Martin concludes, that a trumpet formed by the revolution of this curve about its axis, will augment the sound in a greater degree than any other figured tube whatever.

Caffegran also is of opinion, that an hyperbola, having the axis of the tube for an asymptote, is the best figure for this instrument. Mufchenb. Lit. ad Phil. Nat. tom. ii. p. 296, 410. Martin's Phil. Brit. vol. ii. p. 248, 30 edit.

For other constructions of speaking trumpets by Mr. Conyers, see Phil. Trans. N° 141. for 1678.

Trumpets, Feasts of, in Ecclesiastical History, one of the menstral feasts among the Jews, kept with greater solemnity than the rest, on the first day of the month Tifi. (Numb. xxii. 1—6. Levit. xxiii. 24, 25.) The day of this feast was the new-year's day of the Jews, in which the people were solemnly called to rejoice in a grateful remembrance of God's benefits to them through the last year, which might be intended by blowing the trumpets, as well as to implore his blessings upon them for the ensuing year, which was partly the intention of the sacrifices offered on this day.

The modern Jews have a notion, which they derive from the Mifchna, that on this day God judges all mankind; and therefore, according to Bafnage, their zealots spend, some a whole mouth, others four days, and especially the eve of this feast, in confounding their fins, beating their breasts, and some in lashing their bare backs, by way of penance, in order to procure a favorable judgment on this decisive day.

Trumpet-Fish, Scelopax, in Ichthyology, a fish called also the bellows-fish. In the Linnaean system it is a species of the centrifus; but in the Ariduan, a species of balistes. Pliny calls it ferr. See Centrisus Scelopax.

Trumpet-Flower, in Botany. See Bignonia and Lo-nicer.

Trumpet-Honeysuckle. See Lonicera.

Trumpet-Shell, or Whelk, Buccinum, in Natural History, the name of a large genus of shells, the characters of which are these: they are univalve shells of the form of a trumpet, according to old pictures, with a wide belly, and a large, broad, and elongated mouth; they have a distinct and regular tail, usually long, though sometimes short; they have a hooked beak, and the clavicle is often elevated, though sometimes depressed and contorted. In the Linnaean system, the characters of this genus are, that its animal is a flag, the shell univalve, spiral, and gibbous, the aperture oval, ending in a short canal or gutter. Linnæus enumerates fifty-one species. See Conchology.

The family of the buccinum, when examined ever so strictly, is very large; but according to the general custom of authors, of confounding together several genera under the same name, it is usually made to appear much larger than it really is. Linnæus has comprehended a vast number of shells, by confounding it with the families of the murex and purpura.

It is not indeed peculiar to this author, to have confounded thefe genera: those who went before him have done the same; and Pliny has comprised the buccinum, murex, and purpura, under the general name cerry.

To avoid the general confusion, which arises from not distinguishing the families of the buccinum, murex, purpura, and vis, or screw-shell, it will be proper to observe, that there are regular characters, which distinguish them all, one from another: the characters are these: the buccinum differs from the purpura, in that it has a very long mouth of an oval figure, and has an elevated head; whereas the purpura has a round mouth, and a head somewhat flattened; the tail of the purpura is also usually furrowed, and is shorter than that of the buccinums. The buccinum differs also from the murex in having a longer tail, by the smoothness and variety of colours of its coat, and by having a larger mouth less furnished with teeth; the murex having a smaller and longer-shaped mouth, its surface covered with points or spires, and several teeth.

It is easier to distinguish the buccinum from the screw-shell, as this is always more long and slender than the buccinum; it has also a flat mouth, and has rarely any tail.

The most singular species of the buccinum class, is one that has its mouth turned the contrary way to all other shells: this has been thence called by authors, the unique and the fans pareille.

The buccinum generate in the warm months, and some species of them are seen very frequently remaining in pairs together, upon the rocks defiled by the tide on that occasion. These bee thence supposed to be of a different genus, and have been called buccinum littorale; they are usually found in copulation early in the morning. Rumphius de Telt. Aldrovand. de Telt. lib. iii. cap. 231.


The species of the buccinum being very numerous, they are arranged under several distinct heads, according to certain obvious distinctions, and are as follows: of the buccinum, with long distinct tails and oblong mouths, there are thirteen species; of those with a short tail and a wide mouth, we have twelve species; of those with long erect clivicles, there are
are eleven species; and of those with less erect clavicles, and crooked rostra, there are also eleven species.

It appears from the writings of the ancients, that the famous purple dye, which they obtained from a shell-fish, was not peculiar to any one species; but was found in several of the smaller kinds of Buccinæ; some of which they called marices, from the hollow spines, or long and slender proceffes, which run in different directions from their shells. See Pupíra.

M. Reaumur, when on the coasts of Poitou, found certain eggs of fishës arranged in regular order, and in great numbers, on the rocks and salted banks, which had the fame property with the purple-dyeing liquor of the buccinum; it is not yet known to what particular fish they belong, or what uses they may hereafter be brought to serve. Mem. Acad. Par. 1711.

Pliny seems to derive the name buccinum from buccina, a kind of musical instrument; but it is more probable that instrument took its name from the shell to which it bore resemblance, and of which it might probably have been anciently made. Plin. Hift. Nat. lib. ix. cap. 36. Phil. Tranf. N° 282. p. 1277.

Buccinum lapidifum is a figured stone, shaped like the former, and probably only a petrifaction of the shell above-mentioned.

Ray speaks of a buccinum which was not only petrified, but after petrifaction was converted into a pyrites.

TRUMPERET, in Ornithology, a name given in England to a particular species of pigeon, called by Moore the columba tibicen.

This species is of the middle size of the common pigeon, and made considerably like it; but it is nearly self-colored; is of a mottled black, is feathered down the legs and feet, and is turn-crowned like the nun, and some of the other species; sometimes like the finickin, but much larger: this seems to be the best sort, as being the most melodious. The best character to know them by, is a tuft of feathers growing at the root of the beak; and the larger this tuft is, the more they are esteemed; the reason of their name is, that they imitate in their cooing the sound of the trumpet; but to be often entertained with their melody, it is necessary to feed them frequently with hemp-seed. Moore's Columbarium, P. 45.

Trumperet is also a name given by Mr. Pennant to the phafia of Linneus; because it makes a strong noise with its mouth, which it answers by a different noise from its belly, as if it came from the anus.

TRUMPERET, in a Man of War, one whose office is always to attend the captain's command, and be ready at the entertainment of strangers. In the time of an engagement his proper station is on the poop.

TRUN, in Geography, a town of France, in the department of the Orne; 7 miles N.N.E. of Argentan.

TRUNCATED LEAF, among Botanists. See Leaf.

Truncated Pyramid, or Cone, is one whose top or vertex is cut off by a plane parallel to its base. See Pyramid and Cone.

The word is formed of the Latin truncare, to cut off a part from the whole; whence also truncus, truncum, &c. In Heraldry, they lay truncated.

A truncated cone, or the frustum of that body, is sometimes also called a curtys-cone. See Frustum. See also GAUGHING.

TRUNCATED Roof. See Roof.

TRUNCHEON, of the French trancon, and the Latin truncus, a batton; or a kind of short flaff used by kings, generals, and great officers, as a mark of their command. See Batton.

In our military language, it denotes a flaff of command borne by a general officer.

TRUNCHEON, in Rural Economy, a fort of small framed contrivance with two handles at one end, and two low wheels at the other, which is troubled before the performer using it. It is found convenient in conveying many forts of weighty matters that are in small bulks.

TRUNCHEON, Shot, is an iron shot about seventeen inches long, sharp-pointed at the ends, with a round bowl of lead cast upon it, about an hand-breadth from each end.

TRUNGIBIN, in Natural History, a name given by Rauwolf, Tournefort, and others, to a fort of manna collected from the allagis maurorum, as the common manna is from the aii; and used in the eastern parts of the world as a purge. It is what we call the manna Pericum, and though in itself a very fine and clean kind of manna, yet it is usually so carelessly collected, and mixed with so much filth, that it requires to be given in three times the dose of ours in order to purge. The name seems very evidently to be a corruption of tenenabin or tenenabin of the Arabian, which was the word used by all their authors to express the manna Pericum.

TRUNK, a strong chest or box of a roundish form, at least on the upper side.

TRUNK, in Anatomy, is used for the buttock of the human body, exclusive of the head and limbs.

The trunk is divided into three parts; vis. one common, called the spine, and two proper, viz. the thorax or breast, and the pelvis; which see respectively.

TRUNK, Truce, is also used for the main body of an artery or vein, in contradistinction to the branches and ramifications of it.

The word is particularly applied to certain parts of the aorta and cava.

TRUNK, in Architecture, is used for the fulfl or shaft of a column. Also for that part of the pedestal between the base and the cornice, otherwise called the dye.

TRUNK, in Gardening and Planting, the common name of the boll, body, or principal item in all plants of the tree-kind, and of the stalk in those of all the other sorts. It is that part which rises immediately from the root, and is properly the fock or chief body of the plant or vegetable from the root of which it proceeds, and which ramifications itself into the various branches, branches, buds, leaves, flowers, and fruit which contribute to it, and are the production of it.

The trunks of moss trees, and some other kinds of plants, are of a hard ligneous nature, but in others soft, and in the former are constituted of several different original parts, such as an outermoist coat or thin layer of hard matter of a fibrous quality, the fibres crossing each other in all directions; and the texture of which in some cases is so very thin and clear, that the direction or net-work of them can be seen by holding the substance up against the light. The use of this finely woven tunic or coat is that of defending the true bark of the trunk, or the layer which lies immediately below or underneath it, from the action and injurious effects of the atmospheric air; the protecting and keeping open, by its elastic nature, the fine pores of the exhalating and inhaling syfilids of vessels; the modifying the various impressions which are made by external objects upon the plant or vegetable; the securing and giving protection to the extreme ramifications of the aerial or aqueous vessels; and the covering of the
of the cellular sub stance, in which the several fluids of it are elaborated and prepared.

A true and somewhat inner bark is situated next to the above in the trunk of the tree, and is of a hard texture, but adhering only loosely in trees to the covering which lies below it. In tender plants this covering is often of a soft pulpy nature, and has the denomination of skin.

A still more inner layer, which is often called fiber, forms a third part or covering of the trunk in trees, which is of a membranous and flexible nature, being sometimes altogether separable from the true bark above it, and the white lamina which lies below it. This and the former coat of the trunks in trees are formed of different lamina, as is evident from macerating them in water, by which the cellular substance is destroyed, and the laminated appearance becomes fully displayed. These seem to be parts which are very essential to the life of the plant or vegetable, as in them the chief or principal functions of it are carried on; such, for instance, as those of nutrition, digestion, secretion, and some others. This is plainly proved and shown to be the case, by those trees which have hollow or rotten trunks, the infides being wholly destroyed, and by such plants as are kept in vigour by the perfectly good state of their barks, although the internal parts of their trunks or stalks are wholly rotten and destroyed.

The next part, lamina, or coat, which affords a covering or portion to the trunks in trees, is that which has the title of alburnum or lapwood commonly given to it, and which is situated immediately upon the ligneous or woody part, being most profusely composed of a rather soft white substance that is scarcely perceptible in some sorts of trees, but which in others is hard and perfectly visible, as in those of the oak, elm, and some other kinds. This coat or part forms an imperfect coat of wood in the trunk, not having yet put on the confluence which is proper for perfect wood, the former of which must be arrived at before the latter can be put on. The hardiness and solidity of this part of the trunk are somewhat in proportion to the vigour of growth in the particular tree or plant.

The succeeding or ligneous part, is that which is compose of a compact fibrous substance, disposed in concentric layers, and which surrounds the middle or pithy part of the trunks. It seems as if it were constituted or made up of a conglomerates or collection of dried vascular parts; and in plants of the annual and biennial kinds commonly receives the denomination of flesh.

The fast, middle, or pithy part of the trunks of trees or plants, is that which is situated in and runs through the hearts of them, and which is of a soft vascular nature, differing from that of the cellular textured kind in the perfect whiteness of its colour. It is in the greatest abundance while the trees or plants are in their young state of growth, diminishing in quantity as they advance in age and size, and at length not unfrequently wholly disappearing. Hence it is obviously necessary to them in the beginning of their lives and growths, but not for the continuance of them. It has been suggested as probable, that nature may reserve a superfluous nourishing fluid in this pithy part, if from any cause the young tree or plant should become dry, that then it may be taken up and converted into its food and support.

It must be evident, that what has been said concerning the trunks of trees and plants, must be equally applicable in every respect to the branches and other ramifications, as having the same parts continued from such trunks, of which they in fact form a part in the ways which have already been pointed out.

The trunks of trees and other vegetable productions during their growths are enlarged in their size and thickness throughout their whole lengths, as well as in their heights, and not at any one particular point or part only, as has been fully proved by numerous and repeated trials of various kinds. And in those which are of an annual or one year's growth and duration, the enlargement or expansion in length continues simply until they have protruded and completed their flowers and flowering proics, when the constituent parts of the trunks, limbs or stalks begin to take on a hardened form, and at length, in a gradual manner, become quite dry and rigid.

But in those which are of a perennial nature, or of some years' growth and duration, this enlargement or increase in the trunks, limbs, or stalks, continues until such times as the leaves decay and fall off in the autumnal season, when a germ or bud protrudes and fixes itself in the place which contains the basis or rudiment of a new trunk or stem, that by degrees during the winter months increases in size until the advance of the vernal season, when, throwing off its former covering, it continues the enlargement or increase of the new trunk or stem, in the same manner as the inferior or lower part was augmented during the former year; as in the place where a bud is situated, a swelling-out takes place and extends itself, which is so continued with the new trunk or stem, as fearlessly to leave any mark or veigle where it was. The increase of the trunks or limbs in breadth, however, does not proceed from the dilatation or enlargement of the woody layers of them, but from the generation and production of new laminae or layers, which are every year deposited and added to them, by the vessels which are contained in the barks of them, as has been sufficiently shown by different experiments.

It has been further shown by observation and experience, that the trunks or limbs of trees and some other plants are augmented every year by two woody laminae or layers, but that the size or thickness of them is by no means each year exactly the same, this depending in some measure upon the vigour of growth, age, and state of the climate, whether it is the best or when the rate of growth is the most, the age in the middle degree, and the heat of the situation moderate; for the warmer the summer, the more slender the bark, or outward covering.

The trunks, or limbs and stalks, in trees and plants, are of several different kinds, and distinguished by many different names. Some trees have trunks or limbs which are very short and thick, others have long large clean ones; and some again have them long, small, and clean, others more knotty; some are very crooked, others quite straight; and there are still many further differences in these and several other respects. Trees of the oak, ash, beech, and elm kinds, and the several forts of the fir-tribe, have, in general, the largest, thickest, and cleared trunks or bolts; but there are many other varieties of trees which furnish good useful trunks and limbs, such as the lime, the walnut, the willow, the poplar, the chestnut, &c. in particular situations. The trunks of trees are valuable as timber, according to the particular uses and purposes for which they are designed, and to which they are put. Thus in ship-building, their being properly crooked is a great recommendation; while in many works of carpentry and other descriptions, their being perfectly straight renders them of the most estimation. In fact, their having a straight clean growth is in general a favourable property, and a circumstance which makes them readily disposed of in the markets.

In plants of other kinds the trunks are often small, so as more properly to deserve the title of limbs; and at other times
times they are of a soft and pulpy nature, so as to demand the name of stalks. See Plant, Stalk, and Stem.

In these sorts of plants the stalk is the most common part of trunk or stem, both among small plants of the tree kind, and those of the nature of herbs, as producing and supporting the leaves, flowers, and fruit. The name of stem is given to trunks or stalks of the straw or haulm kind, which are peculiar to grasses and grain, and equally bear the leaves, flowers, and produce or fruit. Frond is a term which is constantly applied to the trunks or stems of plants of the palm and fern kinds or tribes, which are of a compound nature, as being formed of a branch and leaf united or blended together, and not unfrequently the flower and fruit together. The pedicle is a term signifying that part of trunk or flowering-stalk which rises sometimes from the root, but more commonly from the branches, raising or elevating the flowers and fruit, but not the leaves. The peduncle is a term implying that part of trunk or leaf-stalk which bears the leaves only, and not the flowers.

The term fronds is a name which is applied to herbaceous naked stems or trunks which serve to elevate and raise up the fructification only, as in thistles of the hyacinth and daffodil kinds.

The term fronds is applied to that part of trunk or stem which is found in some kinds of fleshy plants, such as those of the common mushroom, and others of the fungus tribe. See these terms respectively.

Trunk is therefore a term which has a very extensive application in the cultivation of garden vegetables of the culinary and flowery ornamental kinds, as well as in planting, as trees of the timber and other sorts, as more fully shown and explained in speaking of stalk, stem, timber, and tree. See thes terms.

Trunk, in Canals, denotes a wooden culvert sometimes made under cauls.

Trunk and Valve, is a trunk of wood laid through the bottom of the bank of a canal, by which water can be let out of the canal, by drawing of the valve at its inner end.

Trunk, in Mining, is a flare or frakes (q. d. stream) with a very small stream or dribble of water, to wash the slime of tin or copper ore, by which the lighter earthy parts are carried off with the water. The operation is called trunking the flumes.

Trunk is also popularly used for the snout of an elephant, by naturalists called the proboscis.

Trunk, in Natural History, is pointed, hollow, slender, and oblong body; joined to the fore-part of the heads of many insects, and serving them for sucking the blood or juices of the animals, or vegetables, on which they feed.

The trunks of flies serve for distinguishing many genera of those little animals, from their different form and other accidents. Some of these are a tube formed all of one simple piece, and others composed of several shorter pieces, nicely joined together; some are thin and as it were flabby, others thick and fleshy; those of some flies are terminated by a foot of broad foot, or by a foot of thick lips; and those of others have no lips, or at least no tenable ones; and others are made in form of a spindle hollowed at the end.

It is often necessary to have recourse to the microscope, to distinguish with nicety and exactness between these.

Without the assistance of glases, however, it is easy to distinguish among the flies of different genera, three different manners of carrying this organ when in a state of imitation. Many flies have trunks which they can shorten, when they are not using them; these are fixed in the fore-

part of the creature's head, where there is a cavity defined to receive them when they are not in use. In many species, this cavity is no more than a mere pinus, or hole, in the fore-part of the head; but in others it is more nicely contrived, the anterior part of the head lengthening itself, and forming a kind of arched vault for its reception. Other flies have trunks which in the time of imitation are turned, or somewhat folded from above downwards: the trunks of bees are of this kind.

There are others also, which have their trunks contained entirely in a sort of case, where they lie straight at length, without being either turned or folded; but they are able to incline them in any direction, in regard to the position of their legs: of this kind are the trunks of the cicadas, gnats, &c.

Among the butterfly clafs, a great number are furnished with a trunk; but there are also a great number that have it not: the fly of the silk-worm, and many, as well larger as smaller kinds, are without this organ. Those species which have it, shew it to the first view; it is placed in the middle of the head, directly between the two eyes. And though in several species it is very long, yet it takes up even in theb but very little room; when it is not in use, it is always rolled up in a spiral form, in the manner of the spring of a watch; and even the shortest of them are thus turned as well as the longest.

There are among the butterflies, some which never settle upon any thing, but are eternally upon the wing, in the manner of swallows: these feed on the wing as those birds do. We often see them buzzing about a flower in the manner of a bee, and in that case they fulfil themselves in the air with their wings, while they unroll their trunk, and thrust its extremity into the flower, to suck from its bottom the honey-dew, which is the common food of them, of the bees, and of many other insects. It has been much disputed, among the curious observers of nature, whether the trunk be originally composed of two parts, or two trunks laid close to another; or whether it were owing to its slender structure, that it was easily split by breaking its parts.

Mr. Bonani was of the first opinion, and Mr. Riget agreed with him at first, but he afterwards became of the contrary sentiment; and thought that they really broke in this splitting, being originally only one; but Réaumur has determined the question in favour of Bonani: having by repeated observations, found them composed of two parallel trunks, nicely and evenly laid sidewise together.

The action of the trunk in sucking is easily seen on giving a piece of sugar to a butterfly that has been kept without food for some days, after its being produced out of the chrysalis; many of the species will in this case feed on the sugar in the same manner that they would on the juices of flowers, and will shew that the use of their rolling up their trunk at times, is the swallowing what they have received into it. The trunks of the several species of butterflies are as different in colour as in shape: some are black, others reddish, many of a cheetin colour; some are also of a pale brown, and some of a beautiful yellow; many of them also are hairy on the under side, and many are smooth. The thicker trunks are always shorter than the flat ones, and have only one canal. Réaumur, Hist. Inf. vol. i. p. 287. 293. 309.

Trunk of Gnats, the instrument by means of which the gnat strikes the flesh, and sucks the blood from animal bodies.

This is a machine well worth an attentive observation. As fine and small as this instrument appears, it is neverthe-

less of a very complex structure. The piercer, or more pro-

Edward has Baker's feen travelling the complex, the is wet is the a introduced, and fuffer magnifying-glas others now vale 2482, upon its neither by will parliament town the be for great creature, obferve to aperture, have part remains trunks trate feeble depth, of trunks they the the other afford mur, Thunk-oo/^ Trunk, the trunk, the cafe the fixed, has not occafion have three. fnure of cyhndric, makes number to this, which is partly doomed animals. of places, is included, and protruMed of a immense animals. of the field afford them a ftuftinent nourishment; for these, like many other of the insect tribes, are partly carnivorous, partly otherwife, and feed equally on flees and vegetables. Reamur, Hift. Infect. vol. iv. p. 586, seq. Baker's Mier.

TRU

These are of two kinds: 1. Such as vegetate by a direct defect, the place of their eruption being sometimes all along the trunk, as in mints, &c. and sometimes only in the umfif point, as in some other plants and trees.

2. Such as neither ascend nor descend, but foout forth at right angles to the trunk, which, therefore, though, as to their office, they are true roots, yet, as to their nature, are a medium between a trunk and a root.

TRUNKED, among Herald, is applied to trees cut off at each end, which are said to be trunked or truncated.

TRUNIONS, or TRUNIONS, of a piece of ordnance, thofe knobs or bunches of metal in a gun, mortar, or howitzer, which project from the piece, and bear it upon the cheeks of the carriage.

TRU-NNI-ON Ring, is a ring about a cannon, next before the trunnions.

TRU-NI-ON Plates, are two plates in travelling carriages, mortars, and howitzers, which cover the upper parts of the fide-pieces, and go under the trunnions.

TRUN, in Geography, a town of the Grifons, where the independence of the Grey League was firft rafied, and an alliance concluded between the chiefs and the communities, on the Rhine; 7 miles W. of Hantz.

TRUNTZ, a town of Pruffia, in Ermeland; 9 miles N.E. of Elbing.

TRURO, a large market-town and borough in the western division of the hundred of Powder, and county of Cornwall, England; is situated in a vale at the conflux of the two small rivers Kenwyn and St. Allen, 22 miles S.S.W. from Bodmin, 46 miles S.W. by S. from Launcelton, and 257 miles W.S.W. from London. It is called in ancient records Trevery, Treraun, and Truro-burgh. It was one of the decayed market-towns for the repairs of which an act of parliament was paffed in 1549; but it has now become a place of considerable trade. Its central situation with refpect to the commerce and chief products of the county, its improved and still improving flate, the regularity and handfome appearance of the buildings, with its increafing population, pufh the title to pre-eminence among the towns of Cornwall. Leland fays, "This is a caftle, a quarter of a mile by well out of Truro longing to the criles of Corawale, now clene down. The fite therof is now ufed for a ftoating and playing place, out of the town of Truro." This caftle is not mentioned in Domesday book, and was therefore erected after the Conquett. William of Worceftre fpeaks of it as being in ruins in the time of Edward IV. It stood on an eminence on the more westerly fide of the two currents: its only remains are a wafe area, and an artificial mount or keep, the earth of which is daily decreasing by its being applied to other purpofes. From the increafe of the buildings from the time of Leland, the fite is now included within the town, which appears to have derived its origin from the caftle; but was foon nearly coeval with it, that it is noticed as exifiting within a century after the Conquett, and as having a charter in the reign of Henry I. The corporation of Truro, as eftablifhed by a charter of queen Elizabeth, bearing date 1589, confifs of a mayor, four aldermen, and twenty capital burgofies. In thefe twenty-five perfun, the right of electing two members to parliament (poffefled by the borough ever since the reign of Edward I.) is vefted; though the number of inhabitants, as aftarined by the population return of the year 1811, is 2482, when the houses were enumerated at 400. The burgoftes of Truro have many privileges by grant of their ancient lords; and the mayor's jurifdiction extends even over Falmouth. This laft mentioned privilege, which is said to have been granted

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by king John, and is recorded in the herald’s visitation of 1629, was lost in the early part of the last century; it having been then contested by, and decided in favour of, the inhabitants of Falmouth, who now enjoy the jurisdiction of their own port. This town is situated in the three parishes of St. Mary, St. Clement, and Kenwyn. St. Mary’s church is a spacious edifice, of the architecture which prevailed in England about the reign of Henry VIII. It consists of two aisles of equal size, and a smaller one; and has a modern fleecy, which does not correspond with the body of the church. In the windows are several fragments of painted glass; and in one of them, on the south side, is the date 1518, the year when the church was erected. Here are seven meeting-houses for the accommodation of dissenters of various denominations. Truro is one of the original coinage towns; and here only, and at Penzance, with the exception of a few times at Helston for the convenience of the merchants, have the coinages of late years taken place. Most of the tin is coined here, and more is exported hence than from any port in the county. The blocks lie in heaps about the streets, and are left entirely unguarded, as their great weight renders it difficult to remove them without immediate detection. Here is a coinage-hall; and Hals, in his Parochial History, mentions the town polishing one so early as king John’s reign. Here is also a manufactory for converting block-tin into bars and ingots: the weight of the former is from eight ounces to one pound; that of the latter, from sixty to seventy pounds each. The bars are exported to the Mediterranean and Baltic; the ingots are sent to the East Indies. Considerable quantities of copper-ore are exported from this town to Wales. A manufactory for carpets has been recently established, which is carried on with great success, and forms a material addition to the export trade. The improvements made in Truro of late years have been very considerable, and particularly since the year 1794, when an act of parliament was passed for lighting and paving the town. The principal street was formerly contracted, and disfigured by a row of houses stretching along the middle from the coinage-hall to the market-place. These have been removed, and a spacious opening formed, from which a new street is built, diverging from the other at right angles. A literary society and a county library were established here in the year 1792. A theatre and assembly-room have also been erected in that part of the town called the High-Crofts: and on the 12th of August, 1799, a county infirmary, a spacious stone building, was opened in Kenwyn parish, under the patronage of the prince of Wales. A free grammar-school was founded at an early period: and there are two exhibitions, of 30l. per annum, at Exeter college, Oxford, for scholars of Truro school, founded by the trustees of the charitable bequests of the Rev. St. John Eliot, who died in 1760. A central school on Dr. Bell’s plan was established in 1813, in which there are 130 boys and 70 girls. An hospital for ten poor housekeepers in St. Mary’s parish was built in 1632, pursuant to the will of Mr. Henry Williams, who endowed it with lands which now produce 120l. per annum. The corporation make widows the exclusive objects of this charity, and allow them a pension of four shillings each per week and clothes. The market at Truro is held by subscription: the claim to it having been certified and allowed in the reign of Edward 1. Here are now two market-days, Wednesday and Saturday, both well supplied with butcher’s meat, fish, and other provisions. A corn-market is also held on Wednesday. Four annual fairs are likewise kept for cattle. About a mile from Truro, on the road to Falmouth, at Calinnick, is a large smelting-house for tin. It consists of ten reverberatory furnaces, six feet in height, and about twelve feet in length, each. Culm-coal is used as the flux, in the proportion of about one-eighth to the ore, of which nearly 600 cwt. is smelted within six hours, and yields about 330 cwt. of tin.—Beauties of England and Wales, vol. ii. Cornwall; by J. Britton and E. W. Brayley, 1802. Lysons’s Magna Britannia, vol. iii. 1814.

TRURO, a town of Nova Scotia; 40 miles N. of Halifax.—Allo, a town of Barnstable county, in the state of Massachusetts, on the E. side of Cape Cod bay, containing 1200 inhabitants. N. lat. 42° 11′. W. long. 70° 2′.

—Allo, a township of Franklin county, in the district of Ohio, containing 672 inhabitants.

TRUSAM, a river which rises in the Brisgau, passes by Friburgh, &c. and joins the Eltz, near Riegel.

TRUSS, TRUSSE, a bundle, or a certain quantity of hay, straw, &c.

A truss of hay is to contain fifty-six pounds, or half a hundred weight: thirty-six trusses make a load.

In June, July, and August, a truss of new hay must weigh sixty pounds. The truss of straw is likewise to weigh a certain weight, but this is various, in some degree, in different places. In other matters, the trusses differ greatly according to custom or other circumstances.

A truss of forage is as much as a trooper can carry on his horse’s crupper.

TRUSS, or Bunch, among Florists, is a term applied to the tuft of flowers which is formed at the top of the main stem or stalk of some plants of that kind, and which, in the auricula and polyanthus fort, consists of a small bunch of flowers, to which the title of pips or blossoms is given, and which are supported by as many little foot-lands, proceeding from out of the top part of the main stem: some of the properties of which are these: the pips or blossoms, which are the flower parts, consist of the disk or outer rim, the eye or inner rim, the tube or pipe, and the thrum, chives, or apices. The pips or blossoms, of these kinds of flowers, should always be rich, and of a lively good colour or colours, as such as may immediately strike and captivate the mind of the beholder with the idea of real beauty; as this is the property which is the foundation of all the others in these sorts of flower-plants: consequently, where the colours of the flowers in them have a faint or dead appearance, or are of an ordinary and inelegant tinge or hue, they are good for nothing, even though the whole of their other properties should be the most excellent.

In all the painted or striped flowers of these sorts, the colours should constantly be so equally distributed over the rim or disk, as that there may be an equal uniformity amidst the whole variety; in order that, upon the whole, the fight may not be in the leaf disfracted or offended with any sort of disproportion, or perceive one side to be of a brighter or darker hue or shade than that of another. The edges of the rims should be round, or at least to near it, that the indentures may bear but a small proportion to the disk; as when these are deep, and the points of the petals stand in somewhat the far-form, greatly divided, the largeness of the vacancies will affect the fight with an evident deficiency: and the edge is still worse in those pips or blossoms which are liable to run out into a greater breadth on one side of the eye than the other; such irregularities and disproporions are very disturbing in these flowers. The eye, which is the iris or little ring that environs the tube or pipe, and which ought to be formed in the manner of the disk, either perfectly or nearly round, and of an entire clear colour; and of a snowy or pure white, in all painted or striped flowers; and of either a white, bright yellow, or good straw-
TRUSS.

Black colour, in self or plain-coloured flowers. The farina, mealy, or dusty property should also be fine; as, if coarse, it will be unpleasant to the eye, or in appearance. The eye of the flower should appear entire, though not separate from the disk or rim; that is, it should be blended with or shaded into it in such a manner, as not to occasion any indistinctness between the edges of the one and the other: as, in flowers where these two properties of the eye are imperfect, the lively contrast or difference between the rim and the eye, which otherwise reciprocally display and show each other off to the belt and most advantage, is, in a great measure, lost and destroyed. The face of the whole pip, rim, and eye, should likewise be so opened as to lie perfectly or very nearly flat; as when it either inclines inward, which is termed cupping, or throws itself backwards, as in particular flowers, such as the martagon lily, the true form as well as colours are in some degree obscured by being covered and put out of sight. See TUBE and TURBON.

The length of the pedicles which support the pips or blossoms in the trufis, should be proportioned to the number and size of the pips which they buttress; as, if they be very long, and the pips small, there will be unsteadily vacancies in the trufis; or if they be short, and the blossoms many and large, they will be too much crowded together, so that neither the colours can be fully viewed, nor the other properties of the pips be displayed. The pedicles should also be sufficiently elastic, firm, and strong, in order that they may not droop by the weight of the pips or blossoms, and fall loose and in a disarranged manner, but buttress the trufis firmly and closely, without either vacancy or crowding. They should, too, be nearly all of the same length, so that the pips may stand together at the same height, and form a regular umbel, or rather corymb, which is the formal perfection of the trufis. The pips should also be nearly of the same size and colour, so as not to be readily distinguished from each other; as otherwise the unity and harmony of the trufis will be destroyed, and though ever so plentifully formed, would appear as if taken from different sorts of these flowers. P. A plant of these kinds should blow freely, and expand all its pips or blossoms at the same time; as, by this means, the colours in them all will appear equally fresh and lively; whereas in those which do not blow some of the pips until others have puffed their prime, the whole appearance of the trufis falls much short of that beauty which would otherwise be conspicuous.

The item or stalk which supports the trufis, and which is mostly termed the main stalk, should be elastic, straight, and sufficiently strong for bearing it without drooping. It is also an excellency in it to be erect and lofty, as thereby the trufis, and of course the whole flower, will make a more stately, commanding, and handsome appearance.

Such plants of these kinds as have these properties or qualities can hardly fail to please the curious florist; yet as, on the one hand, some plants may be somewhat deficient in several particulars of less consideration, and still be juicily deemed fine and valuable flowers; so, on the other hand, it will be an additional excellence, in such as have all these properties, that they naturally stand long in bloom, and wear their colours without alteration or fading in any way. The trufis or bunch is probably so named by florists, in consequence of its having naturally something of that appearance about it.

TRUSS, in the language of Surgery, is a particular sort of bandage, or apparatus, employed in cases of ruptures, (see HERNIA,) for the purpose of keeping up the reduced parts, and hindering a fresh protrusion. It must of course be adapted to the situation and nature of the rupture. As a truf is of all the inventions of surgery one of the most important, and highly essential to the health of a large portion of the human race, the most advantageous modes of constructing and applying it are objects which it is as much the duty of the surgeon to know something about, as about any other means of curing or lessening the danger of so serious and common a disease as a rupture.

A truf which fulfils its intention properly, should compress the neck of the hernial sac, and the ring or external opening of the hernia, in such a manner, that a protrusion of any of the contents of the abdomen will be prevented with complete security. Hence, it is the indispensable quality of a good truf, first, to make effectual and equal pressure on the parts indicated, without causing pain or inconvenience to the patient; secondly, not easily to flip out of its right situation, in the varying motions and positions of the body.

The different kinds of hernial bandages may be reduced to the two classes of elastic and inelastic. The latter are composed of leather, satn, dimity, or similar materials. These cannot be at all depended on, and should, therefore, be entirely banished from surgery. Since (as Mr. Lawrence has remarked) the size of the abdomen varies according to the different states of the viscera, and to the motions of its parietes in respiration, a non-elastic bandage must vary constantly in its degree of tightness, and keep up either too great or too little pressure. The omentum, or intestine, easily slips out when the opening is not exactly closed, and the patient who wears such a bandage, must be in a state of constant insecurity. Those who lead an active life, or are obliged to use laborious exertions, will be more particularly exposed to risk. If the patient, after experiencing these defects, endeavours to remedy them by drawing the bandage tighter, he may confine the viscera, but he produces other inconveniences. The increased pressure injures the peritoneal chord, and may affect the testicle: the integuments become red, painful, and excoriated; and the bandage must be entirely laid aside, until the parts have recovered. Richter has often seen painful tumefaction of the testicle, hydrocele, and even cirrhosis, produced from this cause, and entirely disfigured by the employment of a proper truf. Traité des Hernies, p. 24.

He also law the pad of a non-elastic bandage excite, in the region of the abdominal ring, a considerable inflammation, which terminated after a few days in suppuration. The hernia never appeared again after the cure of the abscess. The inflammation had extended to the neck of the sac, and obliterated that part. Lawrence on Ruptures, edit. iii. p. 69, 79.

Every truf consists of a pad, for compressing the ring or aperture through which the hernia protrudes, and of another piece, which surrounds the abdomen. To these are sometimes added a thigh-flap, which passes under the perineum, and a cephalic, which is applied over the shoulder. The use of the two latter appendages is to keep the pad from slipping up or down, an inconvenience which it is difficult to prevent in certain cases, unless a cephalic or thigh-flap be worn. In the inelastic trufis, the piece which extends round the body, is a simple girdle or band; but in every elastic trufis, this part is constructed with a spring, which is the most important thing of the whole instrument.

Elastic trufis, when they are well made, and fit properly, are to be preferred to the inelastic, in regard to security. They yield to the varying motions of the body; are less liable to flip off the part upon which they are intended to pref;
The valuable properties of this instrument (says Mr. Lawrence) depend entirely on its spring, which keeps the pad constantly prefixed against the hernial opening; and gives it a power of reaction, by which an uniform pressure is maintained under varying attitudes. This elasticity can be attained only by the employment of steel. In the first attempts at procuring something better than the non-elastic bandages, iron was used; and the instruments fabricated by Blegny at Paris were constructed of this metal. It is obviously inadequate to accomplish the ends which we have in view, in treating herniae; yet it is only at a comparatively recent period that its defects have been discovered. Arnaud, whose writings contain much valuable information on this subject, recommends for the spring of a truss a mixture of malleable iron and steel, so that the instrument may be moulded by the hand to any particular shape which the patient may require; and he is followed on this point even by Richter. A truss which admits of such management, must in effect be exposed more or less to the objections which apply to the non-elastic bandage; and the only material which possesses the requisite qualities of firmness and elasticity, is well-tempered steel.

The most important part, then, of an elastic truss, consists of a flat and narrow piece of steel, adapted to the form of the body, and called the spring. This plate is attached to the back of the trunk, terminates anteriorly on an expanded plate of iron, to which it is riveted, placed over the mouth of the face, and extends behind to various distances beyond the spine. The posterior surface of the plate is furnished with a convex cushion, termed the pad, and adapted in form and size to the opening which it is designed to close. The spring is covered externally with leather, and that it may fit easily on the body, its inner face is lined with some soft substance; a strong strap, extending from its posterior end, passes round the found side of the trunk, and is fastened to a hook on the front of the plate. This strap, being perforated by several holes, enables the patient to tighten or loosen the truss at pleasure.” Lawrence on Ruptures, p. 71, 72. edit. 3d.

In a note, this gentleman observes, that the spring of the truss has commonly been a semicircle, with the posterior end resting on the spine. Camper proposed to carry it round to the anterior superior spine of the ilium on the found side; and Scarpa very much approves the plan. Trusses of this form fit with a firmness which cannot be given to the others by tightening the strap. They keep up the rupture much better than a stronger spring of the other kind. Hare-skin, with the hair outwards, is considered the best article for covering the spring, with a view of keeping it from the ill effects of the perspiration.

When it is necessary to make a strong compression, as in large old ruptures, and in persons who cannot avoid labour and exercises, the elastic spring should be made accordingly thicker and broader. But an object of the first-rate importance is to make the spring press equally upon every point of the body which it touches. This is what demands the earnest attention both of the surgeon and the instrument-maker, especially as the hips of some individuals are flat and narrow, while those of other persons are broad and prominent. A thick, flexible, metallic wire, accurately applied round the pelvis, will serve to take the measure and proper shape of the spring, which may afterwards be altered a little, if found necessary. The wire, however, should be somewhat longer, on account of the length of the spring being diminished in the construction of it. Callifen disperses the springs which extend quite round to the opposite side; but he thinks a certain bend of the spring downward, near the pad, is useful in trusses for inguinal ruptures, as, by this means, the part of the instrument which goes round the pelvis can be made to fit more closely, and is placed at a convenient distance from the trochanter, so as to be less liable to derangement. The neck of a truss for a femoral hernia should be shorter, and, in general, the instrument requires in this case the employment of a thigh-strap to keep the pad from slipping into the bend of the groin.

The pad of a truss is frequently composed of a piece of cork covered with leather, with the intervention of some wool or horse-hair. Proposals have been made to use pads which are formed of bladder or elastic gum, filled with air, but we know nothing of the real merits of such contrivances, nor should we expect them to answer. Callifen gives a general preference to pads which have a flat and not a conical surface, which last form not only produces less equal pressure, but is more liable to slip. The shape and size of the pad should of course correspond to the figure and dimensions of the ring, or opening, at which the rupture protrudes. In the inguinal hernia, the pad should be long and oblique; in the crural, shorter; in the umbilical, round; and in the ventral, for the most part, oval. In large old ruptures, the pad should be large accordingly; and in small recent cases, it should be small in proportion. For fat subjects, the pad should be firm and prominent; but for thin persons, it should be flatter and softer. Nay, it has even been found sometimes necessary to accommodate the shape of the pad to the various degrees of convexity or flatness of the os pubis.

Trusses are sometimes fabricated with a pad moveable on the spring, instead of being riveted to it. This may be inclined upwards or downwards, according to the form of the abdomen; and it is retained at the desired point by a spring fitting into the teeth of a rack. In others, the plate contains a screw, by which the cushion is pulled farther inward, or allowed to recede, at pleasure. Although there cannot be a doubt that some of these inventions possess considerable merit, and, in certain instances, superiorly useful, it must be confessed that, in general, their utility is not so much greater than that of common pads, as to make amends for the want of simplicity and the increase of expense. We should be sorry, however, to say anything that would unfairly discourage all such ingenious endeavours to improve so difficult an instrument to make perfect as a truss; and we therefore repeat our belief, that there are particular cases, in which pads, with racks, screws, springs, &c. may be employed with great advantage.

Notwithstanding every care, sometimes even elastic trusses cannot be hindered from slipping away from the part which they are designed to compress. Sometimes they slip downwards, which in fat subjects is generally caused by the projection of the abdomen. Occasionally, the fault consists in the instrument becoming displaced in the direction upwards, which mostly happens in thin persons, and is produced by the flatness of the abdomen. In the first case, the displacement is to be prevented by the use of an elastic scapulary; in the second, the slipping of the pad upwards is to be prevented by the employment of a thigh-strap.

When a patient is afflicted with a rupture on each side, the two protrusions may be very well kept up by means of a single truss, made with two pads, which are joined together, at the exact distance of the rings from each other,
by a piece of felt, applied over the convexity of the symphysis of the pubes, and proportioned in length to the space between the two openings through which the viscera descend. In such cases, however, it is absolutely necessary to have the spring stronger, than if there were only one rupture. The truss should also be made to put on that side of the body, upon which the hernia, most difficult to retain, is situated. There are some practitioners, who give the preference to the use of two single trusses, joined together in front and behind with suitable straps.

With respect to the application and use of trusses, the following instructions seem to merit attention.

1. A truss should never be first applied, or changed, except when the patient is in the horizontal posture, and it is known with certainty that all the contents of the rupture are completely reduced.

2. The first applications of a truss should always be made under the superintendence of the surgeon himself; and care should be taken to put on the instrument in such a manner, that the lower third of the pad will comprefs the neck of the hernial sac against the os pubis, while the upper portion will comprefs the abdominal ring. The surgeon should also make the patient acquainted with the right manner of applying the truss; the principles on which it keeps up the bowels, and affords a chance of a radical cure; the requisite cautions to be observed, &c. When a patient first begins to wear a truss, he should be particularly careful not to be guilty of any imprudent exertions, and it behoves him to observe most attentively, that the instrument does not slip from its proper situation. It will also be necessary for him to pay attention to the instrument being neither too tight, nor too loose.

3. The patient ought to be provided with at least two trusses, which should be changed every morning in bed. In order to save the trusses, especially in fat persons, who periphrize a great deal, it is a good plan to lay a soft piece of linen under the pad.

4. An uneasiness about the ring, which always gives rise to a suspicion that a portion of intestine, or omentum, is protruded, makes it proper to take off the trusses, carefully examine the parts, and reduce them if they have defected.

5. When the skin is excoriated by the trusses, the part may be cured by sprinkling upon it the powder of acetie of lead, fuller's-earth, &c. and washing the part with the faturnine lotion. It will also be right to protect the excoriated place with a piece of linen put under the trusses.

6. When the preflure of the trusses excites affections and swellings of the spermatic cord and testicle, either the thighstrap must be relaxed, or the lower part of the pad made less prominent.

7. In children a very tight truss is altogether hurtful, and may be the cause of various curvatures and deformities; but the erroneous opinion, that they ought not to wear a spring truss, we have noticed in another place. See Hernia.

8. Sometimes very old large ruptures cannot be securely kept up by means of a truss, and even when the pad is extremely large, not more success is often experienced. Should they be retained, it may happen that the ill effects of the compression will be felt in the strained state of the cavity of the abdomen, or in the speedy appearance of another hernial tumour on the opposite side. Ruptures totally irreducible, and various disorders of the testicle and cord, do not admit of the use of a steel truss. Whoever wears a truss, should be careful to employ it day and night, without interruption, so that there may be no opportunity for the hernia to protrude again. If, under the employment of a truss, the rupture once defends again, either a strangulation happens from the narrowness of the neck of the sac; or, at all events, the hope of a radical cure, which may have been entertained for months and years, vanishes in a moment. For experience has put it beyond all doubt, that, by the continual unremitting use of a truss, and the steady retention of the contents of the hernia, the neck of the hernial sac, and the ring, may be gradually leffened in diameter, until they are entirely closed, and a radical cure of the rupture effected. This is more frequently observed in young subjects; seldom in adults; and hardly ever in persons of advanced years. But trusses must be worn a long while, nor should the patient venture to lay aside their use till after many cautious attempts; beginning the experiment at first only in the night-time, and not making it in the day, till after a considerable period from the time when he first thinks himself safe. The longer and more attentively a truss is worn, the greater is the hope of a radical cure. Callifen, Syll add. Chir. Hod. tom. ii.

Representations of various kinds of trusses may be seen in Plate IX. Surgical Plates. Fig. 1. exhibits a common truss. Fig. 2. the spring terminating in front in the expanded plate of metal, often termed the head of the truss. Fig. 3. represents a truss for a double rupture, with two pads affixed to one spring, and furnished with two thigh-strap{s}, which, in each a cafe, would be almost indispensible. Fig. 4. exhibits Dr. Hulme's palm truss, so named by its inventor, from its acting continually like the pressure of a hand. Its particularity consists in its springs not being placed in that part of the truss which goes round the body, but in thePad itself; where there are three spiral springs. A full description of this truss may be found in the Transactions of the Medical Society of London; but as the construction of this instrument does not make much provision against the flipping and displacement of the pad, it can afford very little security to the patient, and does not therefore appear to us to be deserving of recommendation. Fig. 5. represents a very good ordinary truss, made by Mr. Whitford, a surgeon's instrument-maker in Smithfield. Fig. 6. exhibits Mr. Salmon's patent truss, with the additional springs, all three of which together are capable of exerting a force equal to nine pounds weight. A is the spring, made so as to exert a positive force on the cushion at each end. At the front and back ends are different holes, to which the plates and cushions may be instantly shifted by the wearer, so as to admit of being correctly accommodated to the parts. B, C, the additional springs detached, either, or both, of which may be added, so as to increase the power of the truss, if requisite. These springs are simply flipped into a loose leather or other case. D, the front plate with its cushion. This plate will apply to either of the holes in the spring, and is kept on the ruptured part by the pin, on which it turns in all directions; so that whatever be the shape or inclination of the body, the plate adapts itself to such changes, not being confined in its direction by any power of the spring. The cushions are simple cafes stuffed with the softest materials. E, the back plate and cushion. F F a strap is to be used, if occasion require, to prevent a forcible removal of the cushions.

Fig. 7. represents a fection of the pelvis, round which the truss is to be applied. Mr. Salmon contends, that if the spring only passed round to the point diametrically opposite that from which it commenced, it would not remain stationary, as both extremities would rest on planes inclined to their action. For a full explanation of this figure, however,
ever, we must refer to Mr. Salmon’s Mechanical Analysis of Truffles.

Fig. 8. a trufs for a navel-rupture, invented by the late Mr. Marrifon, of Leeds. It conflits of two pieces of thin clafic fleee, which surround the fides of the abdomen, and nearly meet behind. At their anterior extremity they form conjointly an oval ring, to one fide of which is//fastened a fpring of fleee, of the form reprefented. At the end of this fpring is placed the pad, or bolifer, that prefides upon the hernia. By the elefticity of this fpring, the hernia is reprefented in every pofiren of the body, and is thereby con-ftantly retained within the abdomen. A piece of calico, or jean, is fastened to each fide of the oval ring, having a con-tinued loop at its edge, through which a piece of tape is put, that may be tied behind the body.

When there is a great projection of the abdomen below the navel, as is often the cafe in women who have borne many children, the oval ring (epecially if made wide) is thrown into an oblique direfireion, and then does not give the pad so true a bearing upon the hernia. To prevent this inconvenient, Mr. Marrifon made the lower bow of the ring to project more than the upper one; and instead of the calico skirt surrounding the ring, he ufed a belt faftened to the lower bow only, as is reprefented in Mr. A. Cooper’s work on hernia, part ii. plate 9. fig. 6.

Afterwards Mr. Marrifon uſually made his trufles with the lower bow of the ring only; forming this to pojet fo as to fuit the pendulous flate of the abdomen. To the round end of the fpring, which supports the pad, he affixed a frap, in which were contained spiral wires, for the purpofe of regulating the degree of prefire upon the hernia. In a flate abdomen he invented the pofiren of the trufs, dif-recting the bow to be placed above the navel.

Fig. 9. reprefents a new trufs for a navel or ventral rupture, invented by James Execland, trufs-maker at Leeds. The trufs consists of two femicircular bows of bow; of which, at its anterior extremity, is faftened by a diftinct brafs hinge, placed vertically, to the outer fide of an inter-mEDIATE plate of block-tin. This plate is somewhat con-cave on its inner fide. The concavity is filled with a piece of blanket, which is covered with leather. This lining causeds the leather covering to project a little; but in so small a degree, that when the concave fide of the plate is ap-plied to the abdomen, the prefire of the bows brings the rim of the plate, in every part of its circumference, into contact with the skin.

The pofterior part of each bow, for about an inch and a half from its extremity, is turned backward, fo as to form a flat surface, where it refts upon the back of the patient. To the inner fide of this flattened part is fewed a soft leather fuffion, lined with blanket, to prevent the patient from being hurt by the ends of the bows.

A frap of leather is fewed to the covering of the trufs, near the pofterior end of one bow; and a buckle is fixed, in like manner, near the end of the oppofite bow, but refting upon it. By means of this frap, the patient can keep the ends of the bows steady, without being hurt by the buckle. See Hey’s Practical Observations in Surgery.

Fig. 10. fhews a back view of Execland’s navel trufs, and of Salmon’s patent inguinal trufs, applied.

Fig. 11. reprefents a front view of the fame instruments applied.

Besides trufles for ruptures, there are alfo trufles for an other purpofe, namely, supporting the ferotum in cafes of hydrocele, inflamed teftile, farcocele, &c. These lat are commonly called bag-trufles, or futpenfory bandages. In cafe, they fimpfly confift of a linen bag, for the reception of the ferotum, and of a girt which goes round the body, and to which the bag-part of the trufs is faftened by means of little hooks, fo as to afford the requeft degree of support to the ferotum. Many persons who hunt, and are accu-tomed to take violent horfe-exercife, make use of bag-trufles, in order to keep the ferotum from being hurt by contuions againdt the pumme! of the faddle.

TRUSSES, in a Ship, a machine employed to pull a yard home to its refpective mat, and retain it firmly in that pofiren. As the trufs is generally used instead of a parrel, it is rarely employed, except in flying top-gallant-fails, which are never furnished with parrels. It is no other than a ring or traveller, which encircles the maft, and has a rope faftened to its after-part, leading downward to the top or decks; by means of which the trufs may be ftraightened or fackened at plefire. The haliards of the top-gallant-fail being passed through this ring, and the fail being hoifted up to its utmost extent, it is evident that the yard will be drawn clofe to the maft, by pulling down the trufs close to the upper part of the fail. For, without the trufs, the fail and its yard would be blown from the maft, fo as to fwing about by the action of the wind, and the rockling of the veffel; unlefs the yard were hoifted clofe up to the pulley in which the haliards run; which seldom is the cafe in flying top-gallant-fails, becaufe they are ufually much fhallower than thofe which are fixed or fanding. Falconer.

TRUSSES, short pieces of ornamental carved work, mostly in small fhips fitted under the taffarel, in the fame manner as the term-pieces.

TRUSS-Parrel. See PARREL.
TRUSS-Pendants. See PENDANTS.
TRUSS-Tackles. See TACKLE.

TRUSSED, in the Manage. A horfe is faid to be well-trufled, in French bien ficte, when his thighs are large, and proportioned to the roundnefs of the croupe. On the contrary, a horfe with thin thighs, that bear no proportion to the breadth of the croupe, is faid to be ill-trufled.

TRUSSES, in Rope-Making, have a back with flout pin and four legs braced together. They are ufed at the upper end of a rope-ground, or put under ropes of a short length, when the frands cannot be put on the flake-heads.

TRUSSING, in Falcorv, is a hawk’s raifing any fowl or prey aloft, foaring up, and then defcending with it to the ground.

TRUST. See CESTUI que TRUST.
TRUSTEE, one who has an efteate, or money, put or trufled in his hands for the ufe of another. See FIDES commiffam.

TRUSTRA. See Tristra.

TRUTH, VERITAS, a term used in opposition to falfe-

hood; and applied to propositions which afferm or accord to the nature and reality of the thing of which something is affirmed or denied.

Thus, when we fay, that four is the fourth part of twice eight, that proposition is true, becaufe agreeable to the nature of thofe numbers.

Truth, according to Mr. Locke, consists in the joining or separating of figns, as the things signified by them do agree or differ one with another. Now the joining or separating of figns, is what we call making of propositions.

Truth, properly, belongs only to propositions, of which there are two farts, mental and verbal; as there are two farts of figns commonly made ufe of, viz. ideas and words.

Mental propositions are thofe in which the ideas in our underftanding are put together, or separated, by the mind perceiving or judging of their agreement or difagreement.
Verbal propositions are words put together or separated, in affirmative or negative sentences. So that proposition consists in joining or separating of signs; and truth consists in putting together or separating those signs, according as the things they stand for agree or disagree.

Truth, therefore, as well as knowledge, may come under the distinction of verbal or real; that being only verbal truth, where terms are joined according to the agreement or disagreement of the ideas they stand for, without regarding whether our ideas were such as really have, or are capable of having, any existence in nature. But it is then they contain real truth, when these signs are joined as our ideas agree; and when our ideas are such as we know are capable of having an existence in nature: which, in substances, we cannot know, but by knowing that such have existed.

Truth is the marking down in words the agreement or disagreement of ideas, as it is. Falsehood is the marking down in words the agreement or disagreement of ideas, otherwise than it is: and so far as these ideas, thus marked by sounds, agree to their archetypes, so far only is the truth real.

The knowledge of this truth consists in knowing what ideas the words stand for, and the perception of the agreement or disagreement of those ideas, according as it is marked by those words.

Besides, it is taken in the strict sense before mentioned, which is also called logical truth, there are other sorts of truths; as,

**Truth, Moral**, which consists in speaking things according to the perfunction of our own minds, or the conformity of our expressions to our thoughts, called also veracity; and in a more general sense, comprehending also faithfulness, which is a conformity of our actions to our words. Whereas lying or falsehood, as opposed to truth, is generally a mean, selfish, or malevolent, and always an unjustifiable, endeavour to deceive another, by signifying or affirming that to be truth or faë, which is known or believed to be otherwise; and by making promises, without any intention to perform them.

**Truth, Metaphysical or Transcendental**, which is nothing but the real existence of things conformable to the ideas which we have annexed to their names.

In which sense a clock may be said to be true, when it answers the idea or intention of the person who made it. Others will have metaphysical truth to consist in the agreement of a thing with the idea thereof in the divine understanding.

**TRUTINA Hermetis is used, among Astrologers, for an artificial method of examining and rectifying a nativity, by means of the time of conception.**

**TRUTINATION, formed from trutina, a pair of scales, the act of weighing or balancing a thing.**

**TRUTTACEOUS, in Ichthyology, the name of a genus of fish, of the trout kind, which are distinguished from all other fish by a small fat fin, which they all have near the extremity of the back, and which has no rays or nerves. Of the fish of this genus, some live only in fresh waters, never entering the sea or salt rivers; others frequent both the fresh and salt waters, and are therefore called anadromous.**

The trout which have, and those which have no teeth. Of the edentulous kind, or such as have no teeth, are the lavaretus (for, thymallus, oxyrinchus, and albula); and of the toothed kind, are the salmo, umbra, trutta, carpio, &c. In diñction, the truttaceous fish have all apophyses to the pyrilius, and are all a high-tailed and fine fish for the table.

Ray's Ichthyology, p. 182.

**TRUTULENSIS Portus, in Ancient Geography, a port of the isle of Albion, according to Tacitus, in his life of Agricola. The situation of this port has not been factually ascertained; but it has with the greatest probability been fixed at Richborough or Rutups, in the county of Kent.**

**TRUXILLO, in Geography, a town of Spain, in Eifremadura, defended by a citadel; the birth-place of the celebrated Francis Pizarro, the conqueror of Peru; about 40 miles N.N.E. of Merida. N. lat. 39° 15'. W. long. 5° 12'.**

**TRUXILLO, a city of South America, in the viceroyalty of Peru, and seat of a bishop. It was built in the year 1535, by Don Francisco Pizarro, in the valley of Chimo. Its site is pleasant, notwithstanding the fundame of the soil, the general inconvenience of all the towns in the valleys. It is surrounded with a brick wall, and from its circuit may be classed among the cities of the third order. It stands on a small river, about half a league from the sea; two leagues to the northward is the port of "Guanchaco," the channel of its maritime commerce.**

**Truxillo**, the houses make a creditable appearance. The generality are of brick, with little balconies, and superb porticoes; but the others are of baxareques. Both, however, are low, on account of the frequent earthquakes, and few of them have so much as one story. The corregidor of the whole department resides in this city, and also a bishop, whose diocese begins at Tumbes; with a chapter, consisting of three dignitaries, namely, the dean, archdeacon, and chaplain, with four canons, and two prebendaries. Here is an office of revenue, affixed by an admitted and treasurer, of which resides at Lambayeque, several convents, a college, and an hospital. The inhabitants consist of Spaniards, Indians, and all the other calls. Among the ladies are several rich and distinguished families. The women in their draperies and costumes follow nearly those of Lima. About a league from the city is a river, the waters of which are conveyed by various canals through this delightful country. The dioce of comprehends eight juridictions, viz. Truxillo, Sana, Piura, Casamarca, Chachapayas, Lulia and Chilcas, Patan or Casamarquina, and Jean de Bracamoros; the last is situated in the province of Quito; the rest in the viceroyalty of Peru. The jurisdiction of Truxillo is situated on the coast of the Pacific ocean, and extends twenty leagues in length, and as much towards the interior part of the country, composed throughout of beautiful valleys. In this climate there is a sensible difference between winter and summer; the former being attended with cold, and the latter with excessive heat. The country of this whole valley is extremely fruitful, abounding with sugar-canes, maize, fruits, and garden vegetables, as also with vine and olive yards. The parts nearest the mountains produce wheat, barley, and other grain; so that the inhabitants enjoy not only a plenty of all kinds of provisions, but likewise make considerable exports to Panama, especially of wheat and fuggars. This remarkable fertility has been improved to the great embellishment of the country; so that the city is surrounded by several groves and delightful walks of trees. The gardens also are well cultivated,
TRY

TRYBLION, TRYBERG, TRYAL.

TRYGUM, in Ichthyology, the Greek name given by Aelian, Athenaeus, and Appian, to the fish which we call the paffinae marina, or fire-faire. Aristote and some others write it trugum.

TRYING, in Pharmacy, the purifying of fat substances by means of melting, and separating them from their membranes, &c. See Suet.

In the College Dispensatory, the method laid down for the purifying of lard, sue, &c. was this: melt them at a gentle fire, with the addition of a little water intermixed, and, when melted, strain them from the membranes. The addition of water in this keeps the fat from burning and becoming black, which it would otherwise do; for the water not being capable of receiving any greater degree of heat than that of boiling, will keep the bottoms of the vessel from growing too hot, much better than the nicest management of the fire could do.

TRYING, in Sea Language, denotes the situation in which a ship lies nearly in the trough, or hollow, of the sea, in a tempest, particularly when it blows contrary to her course. In trying, as well as in scudding, the sails are always reduced in proportion to the increase of the storm. Thus, in the former state, the ship may lie by the wind under a whole main-fail, a whole fore-fail, or a whole mizen; or under any of those sails, when diminished by the reef or balance. As the least possible quantity of sail used in scudding is the goose-wings of the fore-fail, so, in trying, the smallest portion is generally the mizen-stay-fail, or main-stay-fail; and in either state, if the storm be excessive, she may lie with all the sails furled, or, according to the sea-phrase, under bare poles.

The intent of spreading a sail at this time is to keep the ship more steady, and, by preliting her side down in the water, to prevent her from rolling violently; and also to turn her bow towards the direction of the wind, so that the shock of the waves may fall more obliquely on her flank than when she lies along the trough of the sea. While she remains in this situation, the helm is fastened close to the lee-fide, or, in the sea language, hard-a-lee, to prevent her, as much as possible, from falling-off. But as the ship is not then kept in equilibrio by the effort of her sails, which at other times counterbalance each other at the head and stern, she is moved by a slow but continual vibration, which turns her head alternately to windward and leeward, forming an angle of three or four points in the interval. The part where the flops, in approaching the direction of the wind, is called her coming-to, and the contrary excess of the angle to leeward is termed her falling-off. Thus, supposing the wind northerly, and a ship trying with her starboard fide to windward: if, in turning her head towards the source of the wind, she arrives at N.W. 45° N. or N. 50° W. and then declines to the leeward as far as W. 45° S. or S. 45° W. the former will be called her coming-to, and the latter her falling-off. In this position she advances very little, according to the line of her length, but is driven considerably to leeward.

Falconer.

TRYLISIA, in Geography, a town of Ruffian Poland; 10 miles E.N.E. of Zyтомiers.

TRYON, a county of the state of New York.

TRYON Mountains, mountains of North Carolina, west of Salisbury, bordering on Tennessee.

TRYPETHELIUM, in Botany, from τρυπη, a perforation, and ἄνθος, a nipple, on account of the mammillary orifices of the warts containing the receptacles; a genus of the great family of Lichenes. (See that article.)—Achar.

Lichenogr.

Eff. Ch. Crust somewhat cartilaginous, flat, uniform, fixed. Warts of the substance of the crust, coloured, prominent. Receptacles several, concealed in the substance of each wart, of a thick, black, spongy texture, at the orifice nipple-shaped, projecting as far as the surface of the wart, the globular cellular nucleus being altogether internal.

Professor Acharius defines eight species, all found on the banks of different tropical trees. They are nearly allied to his Theothema. See that article.

TRYPHALIA, in Ancient Geography, a maritime country of the Peloponnesus, between Messenia and the Elide, according to Polybius.

TRYPHERA, τρυφερα, in Pharmacy, a denomination given to divers medicines, especially of the opiate kind. The great tryphera is composed of opium, cinnamon, cloves, and several other ingredients: it is used to fortify the stomach, to stop fluxes, and is good for some diseases of the womb.

The word is formed from the Greek τρυφερά, delate, on account of their gentle and pleasant operation, or, according to others, because they make those who use them reft.

The Saracenic tryphera, and Perian tryphera, thus called, because first introduced, the one by the Saracens, and the other by the Persians, were both of them gentle purgatives.

TRYPHIDORUS, in Biography, a Greek poet, was a native of Egypt, and commonly referred to the reign of the emperor Aenæus, in the commencement of the fifth century. Of his history little is known; but he was designated a grammarian, and wrote many works, the titles of which are given by Suidas. Of these, none are extant besides his poem on the destruction of Troy, ἡ Ἰλιανή, in about 700 lines, without any disarranging merit besides it’s being a relic of Greek literature. It was first printed by Aldus, and has passed through subsequent editions by Merrick, Oxon. 1741; Bandini, Florent. 1765; and Northmore, Oxon. 1791, which are the most esteemed. Volusius. Moreri. Gen. Biog.

TRYST'S, CATTLE, a term applied to fairs in some of the northern parts of the island.

TRYSUNDA, in Geography, a small island on the W. side of the gulf of Bothnia. N. lat. 63° 9'. E. long. 18° 35'.

TRIVET, a village of Ireland, in the county of Meath. This place was rebuilt by Hugh de Lacy, and peopled by a colony of English; after which it became a considerable town, but is now fallen to decay; 8 miles S.E. of Navan.

TSABA, a town of Asiatic Turkey, in Natolia; 10 miles E. of Bolı.

TSABA-CHOU, a town of Corea; 43 miles S.S.E. of Koang-techeou.

TSAKATHURN. See CSAKATHURN.

TSAKTELU, a town of Asiatic Turkey, in Caramania; 28 miles N.E. of Akheher.

TSALGO, a town of Georgia, in the province of Carduel; 50 miles S.W. of Telifs.

TSAL-HASSAR, a town of Arabia, in the province of Hadsjar; 45 miles N.N.W. of Catham.

TSANG, a city of China, of the secon rank, in Petcheli; 102 miles S. of Peking. N. lat. 38° 21'. E. long. 116° 34'.

TSANG-CHIN, a town of Corea, near the sea; 35 miles S.S.W. of Han-techeou.

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TSANPOU. See SANFOO.

TSANTE-AGHISI, a town of Asiatic Turkey, in Natolia; 12 miles N.W. of Eregeri.

TSAO, a city of China, of the second rank, in Chantong; 72 miles W.S.W. of Yeng-techeou. N. lat. 35° 22'. E. long. 115° 16'.

TSÄO-SU, a small island near the coast of China. N. lat. 25° 22'. E. long. 119° 42'.

TSAO-TCHANG, a town of Corea; 20 miles N. of Han-techeou.

TSAPHARI, in the Materia Medica of the Ancients, a name given by some to the cadmia, called by Dioscorides placitis; and by others of the Greek writers, sonitis and onychitis. It was a flat kind, forming a sort of crust or crust on the walls or sides of the furnace; hence it had the name placitis, or crustaceus; and it was called onychitis and sonitis, because, when broken transversely, it appeared made up of several successive plates, which had the appearance of so many belts or zones. Scalp tells us, that this and the botryoid cadmia were dug out of the mines; that is, that they were natural productions; but this is erroneous, and contrary to all the accounts of the ancients.

TSASMA, in Geography, a town of Crimea; 8 miles E. of Ivanitz.

TSATSORKEN, a town of Thibet; 501 miles E.S.E. of Laffa.

TSCHAGATAY, or Dschagata, a name given to the Mongolian state, which was assigned to one of the sons of Tchingis-khan, so called after the name of its founder, to whom his father assigned the Greater and Less Bucharia, Turfan, the country of the Igers, and part of the present Kalmuckey.

TSCHA-HAFFER, a town of Arabia Deserta; 80 miles W. of Cathem.

TSCHAMA-CALAB, a town of Persia, in Adirbeyzan; 66 miles S.E. of Tauris.

TSCHARSHEBEH, a town of Asiatic Turkey, in Natolia, on the Meinder; 20 miles N. of Degniuzl.

TSCHASCHWITZ, a town of Silisia, in the principality of Neifie; 4 miles W. of Neifie.

TSCHASLAW. See Czsaslau.

TSCHASTOLOWITZ, a town of Bohemia, in the circle of Konigigratz; 14 miles E.S.E. of Konigigratz.

TSCHAVAT. See JAYAT.

TSCHAEHENDORF, a town of Silisia, in the principality of Neifie; 9 miles N.N.E. of Pachtkhan.

TSCEKENAGAR, a town of Asiatic Turkey, in Caramania; 50 miles N.N.E. of Cogni.

TSCHELENSTACH, a town of Austrian Poland, in Galicia; 28 miles N. of Cracow.

TSCHENGRA, a town of Bulgharia, near the Daphne; 50 miles W.S.W. of Varna.

TSCHENSTOCHOWA, a town of Austrian Poland, in Galicia; 46 miles N.N.W. of Cracow.

TSCHEREMISSES, or Tschermisses, a tribe of Finns, who dwell in the governments of Viatka, Kazan, Simbirsk, and Ufa, on both shores of the Volga, especially the left. They call themselves MARI, i.e. men. Although their language is mixed with Tartarian and Russian words, it is easily distinguishable as a Finnish dialect. The Supreme Being they call Yuma. In the time of the Tartars they were subject to them, and dwelt more southerly, between the Volga and the Don; but at the downfall of the Tartarian dominion, they fell to the Russian empire, and even in this state they long retained their own khans, which, however, ceased upon the
the extinction of the princely race. They were formerly a pastoral people, but under the Russian government they are gradually becoming husbandmen. The present amount of them is not known; but they have been estimated at 20,000.

**TSCHERIKOV.** See Tschcherikov.

Tschcherikov's Island, an island in the North Pacific ocean, so called by Capt. Vancouver, after the companion of Beering. In the point of view in which Capt. Vancouver saw the south-west, southern, and eastern sides of this island, it appeared to form a somewhat irregular four-sided figure, about ten leagues in circuit; having from its western part, which is low and flat, and which had the appearance of being infular, a remarkable high, flat, square rock, lying in a direction S. 66° W. at a distance of two miles, between which and the island is a ledge of smaller rocks. The centre of the island appeared to be in N. lat. 55° 49'. E. long. 205° 4'.

**TSCHERKASK.** See Tscherkask.

**TSCHERKASSIANS.** See Tscherkasses and Circassians.

**TSCHERNEMBL.** See Zernembl.

**TSCHERNOYAR.** See Tschernoiyar.

**TSCHERSK, or Czersk.** See Czersko.

**TSCHESCHENGIANS, or MISCHSCHIANS.** A tribe of vaffals to Russia, living in the eastern part of the great Kabardia, who in time of war can raise 5000 horsemen.

**TSCHESME',** a small town of Alta Minor, situated almost opposite to the isle of Scio, at the head of a spacious road, to which art has no occasion to add, in order to make it a good harbour. A citadel somewhat extensive, constructed by the Genoese, runs sloping to the sea-thore, and seems intended to secure from all infult both the town and the harbour. Tschefm is built on the ruins of Cyillus. This road is famous for the victory which the Roman fleet gained there over that of Antiochus, and also for the burning and total destruction of the Turkish squadron by the Russians in 1770. Geographers place at the head of a bay, two or three leagues to the N. of Tschefm, the ancient Erythrae, celebrated for the oracles of the Sibyl. The territory of Tschefm furnishes grain and fruit in abundance; a little oil and a great many raisins are also produced here. It is from this harbour that the isle of Scio draws a great part of its subsistence, and by means of it frequently keeps up an intercourse with Smyrna.

**TSCHETCHES,** the name of a colony of strangers and Chrlitans, who are secluded from the world in a most sequestered part of the wilds of Caucasus, so called in the language of the country. These poor people are said to lead lives of the most exemplary piety, and to exhibit a primeval simplicity of manners. They are totally ignorant of their origin, any farther than knowing that they are strangers, and their being considered as such by the scattered neighbouring nations. From an affinity in their language, and some other circumstances, they are supposed to be descended from a colony of Bohemians, who, flying from religious persecution in their own country towards the close of the fifteenth century, found at length a refuge from oppression in the district from the rest of mankind which these remote deferts afforded.

**TSCHIGRI, a town of Russia, in the government of Kurik; 48 miles E. N. E. of Kurik.**

**TSCHILLA, a town of Bohemia, in the circle of Rakonitz; 8 miles S. W. of Rakonitz.**

**TSCHIRNE, a town of Silezia, in the principality of Glogau; 20 miles E. of Gros Glogau.—Alo, a river of Silezia, which runs into the Bober, two miles below Sagan.**

**TSCHIRHAUSEN, EHRENFRIED WALTER VON,** in Biography, an ingenious mathematician, was a descendent of a noble Bohemian family, and born at Kilplingwald, in Upper Lusatia, in 1651. Having studied for some time at the university of Leyden, directing his particular attention to mathematics and philosophy, he entered into the Dutch army in 1672, and for the purpose of further improvement visited France, Sicily, Italy, and Malta. He also established three glas-houses in Saxony, with a view to the improvement of the science of optics, and having shewn how porcelain might be made from an earth found in that country, he may be regarded as the founder of the Dresden porcelain manufactory. As to his claims on the invention of caustic curves, we refer to the article Caustic Curve. His account of them was communicated to the Academy of Sciences at Paris in 1682. See also the fame Memoirs for 1703. For the construction and powers of his burning-glasses, contrived about the year 1687, we refer to the article Burning-Glafs. Heedless of the fame which he so justly acquired, Tschirnhausen took delight in encouraging the researches of others, who were engaged in pursuits similar to his own, and was at considerable expense in printing works of public utility. He died, highly esteemed and much regretted, in the month of September 1758. He furnished the Leipzig Translations with many articles; and also the Memoirs of the Academy of Sciences with the following: viz. "Observations on Burning-glasses of three or four Feet Diameter," in the vol. for 1693; "Observations on the Glass of a Telecope convex on both Sides, and of thirty-two Feet focal Distance," 1700; "On the Radius of Curvatures, and finding the Tangents, Quadratures, and Rectifications of many Curves," 1701; "On the Tangents of Mechanical Curves," 1702; and "On a Method of Quadratures." The only work published separately was his "Medicina Mentis," resembling Malebranche's "Recherche de la Verite," but much more extensive; first published in 1687, and again with improvements in 1695. Montucla, Hist. des Mathem. Hutton's Math. Diet. **TSCHIRNAUSIANA QUADRATRIS.** See Quadratrix Tschirnhausiana.

**TSCHOPA, in Geography, a river of Saxony, which rises near Weifenthal, on the borders of Bohemia, and runs into the Mulda, between Dobele and Leisping.**

**TSCHOPA, or Zichapou, a town of Saxony, in the circle of Erzegiburg, celebrated for its blue manufacture; 7 miles S. E. of Chemnitz. N. lat. 50° 4'. E. long. 13° 2'.**

**TSCHUDI, AEGID, in Biography, an eminent Swis historian, was descended from a noble family, and born at Garus in 1503. After completing his school education, he went to Basel, and accompanied his preceptor Glarancus to France, with a view to farther improvement. Upon his return to his native place, he was employed, in 1528, on a million respecting the Reformation, in which he conducted himself to the satisfaction of both Reformers and Catholics; and in the following year he was chosen chief magistrate of Sargans. By his discharge of the duties of this office, he gained incrasing reputation, and more extended truits of a similar kind. His great object was to enlurge his acquaintance with the Helvetic history; nor did he cease to pursue it, even in the military service of France, or in any of the honourable stations which he was appointed to occupy. Towards the close of his life he was severely afflicted with the stone, but death terminated his pains and labours in the year 1572, and 60th year of his age. His principal works were "A Description of the ancient Rhetaia," published at Bale in 1538; the "Helvetic Chronicle," commencing with the year
TSHUKOTSKOI Noss, or Cook's Straits, in Geography, a part of the shores of the government of Irkutsk, walked by the Eastern or Pacific ocean, extending to the frontiers of China; or in other words, from the mouth of the river Aimakan; i.e. from about 65° to 45° N. lat.

TSHUKTCHES, a people who occupy the north-eastern point of Siberia, towards the Frozen ocean and the Eastern ocean, which is called the Tschuktschy-cape, and in all respects so much resemble the Koriaks, that one might be induced to take the two nations for relative items. They may be computed at 4000 heads. We may naturally suppose that they are the primitive poiffleurs of these coasts, who either came over from the continent of America, or were divided by the probable infraction of the sea, and the consequent separation of the two quarters of the world. They, as well as the Koriaks, Kamchadales, Tunguses, and Lamutes, bear a great likeness to the nearest Americans beyond the straits.

TSHUVASSES are a very numerous nation of Finns, paying the tax for more than 200,000 heads. They reside principally on both sides of the Volga, in the governments of Tobolsk, Viatka, Nizhnei-Novgorod, Kazan, Simbirsk, and Ufa. Their language at present borders more upon the Tartarian than that of the Finns, and hence from will not allow them to belong to this flock; nevertheless, their manners and customs are very much resemble those of the Finns, particularly those of the Votaks and Tscheregimies. These three tribes dwell together in villages, but never in towns; they are inured to agriculture, and have abandoned their nomadic way of life; they are fond of horse-flies; they are mostly heathens, and they have among them enchanters, and a sort of place for divine worship, which they denote by the generic name of Keremet. At their meetings they sacrifice a horse, in which their principle religious solemnities consists. See Tscheremisses.

TSE, a town of China, in Shan; 300 miles S.S.W. of Peking. N. lat. 35° 30'. E. long. 112° 26'.

TSEBID, or Taeberit, a town and district of Africa, in the country of Sugulmeua; 75 miles E. of Sugulmeula. N. lat. 31° 46'. E. long. 1°.

TSELGA, or Tschelga, a town of Abyflinia; 30 miles N. of Gondar.

TSEMURITZU, a mountain of Croatia; 20 miles S. of Bihacs.

TSENA, a river of Malacca, which runs into the Chineese sea. N. lat. 7° 33'. E. long. 101° 21'.

TSERKESB, a town of Asiatic Turkey, in Natalia; 36 miles N. of Angura.

TSHAC, a mountain of Little Bucharia; 80 miles S.S.W. of Hotun.

TSHANI. See Tchani.

TSHARISKOI MOUNTAINS, a very extended branch of the Altai mountains that fall to the shore of Russia, in the range of Kolbychan. They comprise the whole space between the highest sources of the Ulba, Ouba, and the Ko-kofun (to the point where the Thuya falls into the Koko-fun), and between the course of this latter river and the Kama, and carries its powerful forked ridges along both sides of the Thaari, from its origin to its disemboosing into the Oby. The direction of these mountains is from E. to W. and N.W., and on the S. they are parted, by a rude valley, from the Oubinfiok snow-mountains. In several places this range rises to a great height, having up enormous pinnacles, which in some parts are covered with never-failing snow, and which, for the most part, consist of granite, porphyry, Jasper, and flint breccia. One of these, viz. the Tjeeretzkoi, to a considerable height consists of marble, which contains a multitude of sea-shells. These in general are found to be 4392 Paris feet higher than the Shlangen-burg. One of the highest points is the Kojfikpina-Sopka (the Ragged-head), consisting of monstrous blocks of hoary granite. In several places of these wild and extensive mountains, iron, copper, and lead ores have been dug up, but no regular works have been established.

TSHATSHI, a town of Little Bucharia; 30 miles N.E. of Afu.

TSHEGULA, an island belonging to the class called Fox islands, and arranged by Muller under the appellation Kavalaag.

TSHENIKE, a town of Asiatic Turkey, in the government of Sivas; 20 miles N.E. of Amaseh.

TSHETCHINA, one of the islands comprehended under the name of Andreaofskiye oflrova, on which a high white mountain overtops the reef, which is apparently an extinct volcano, as there are still hot springs on this island.

TSHETGIVEN, one of that class or division of the islands that lie between Kamtschatka and America, called Chao.

TSHIBUK-ABAD, a town of Asiatic Turkey, in Natalia; 18 miles N.E. of Angura.

TSHIGAMA, one of the class of islands called Fox islands, distinguished in Mr. Muller's arrangement under the name Kavalaag.

TSHI-KOI, a river of Russia, which runs into the Selengu, 12 miles S. of Selenginfuel.

TSHI-KOTA, one of the Kurile islands, distant from Kunaffy island 70 veris, 120 veris long, and 40 broad. It has lofty mountains, with similar forests to those of Kunaffy, with lakes and glooms of wholesome water.

TSHILLIENI, a town of Walachia; 7 miles S. of Caracalla.

TSHINKA, in the Materia Medica, a name by which some authors have called the clove-tree, the tree which produces the spice of that name.

TSHIRINKUTAN, in Geography, one of the Kurile or Kunilki islands, about 30 veris from Ikarma. The island is round, and its diameter is about fifteen veris. A mountain nearly upon the island is continually emitting smoke, and very frequently large stones roll down one of its sides, by which a valley has been excavated from top to bottom. The coal round about is mountainous and rocky. It has a great number of wild fowl, and in other respects very much resembles Ikarma.

TSHIRPO-OI, one of the Kurile islands, may be estimated in length and breadth at 15 veris. This island has had a volcano, that has discharged stones from the whole face of it. Instead of forest-woods, it presents to view merely bushes of the forbus sylvetris, but no trees, and one small saline lake. In one spot is a salt-spring of that kind called acidula, the water of which洛杉矶 its acidity by boiling. On an adjacent island is also a volcano.

TSHLUCHOW, a town of Prussian Pomerelia; 44 miles S.S.W. of Danzig.
TSIA, in Botany, a name taken from the Japanese, and used by some authors for the tea-tree.  
TSJAKELA, H. M.—Ficus Malabarica, fémel in anno fruitífera, frutíá miníma, a species of fig-tree growing in Malabar. Of the bark of this tree they make strings for their bows, and prepare a red colour for dyeing the Cambavan cloths.  
TSIAM PANGAM, a name used by some authors for the tree whose wood is the log-wood, used in dyeing, and in medicine.  
TSIAMAJA, in Geography, a town of Laos; which see.  
TSIAMA. See CHAMPA.  
TSIANA EVA, a name given by some authors to the coitus root.  
TSIAO, in Geography, a city of China, of the second rank, on the south coast of Corea; 35 miles S.S.W. of Kiong-teou. N. lat. 36° 45'. E. long. 105° 16'.—Alfo, a town on the west coast of the island of Corea, about 60 miles in circumference; 42 miles S.W. of Nang-king.  
TSIAO-TING-CHAN, a town of Corea; 50 miles E.N.E. of Koang-teou.  
TSIAO-TONG, a town of Corea, on an island of the same name. N. lat. 37° 48'. E. long. 124° 14'.—Alfo, an island in the Hoang-hai, or Yellow sea, near the coast of Corea, about 35 miles in circumference; N. lat. 37° 44'. E. long. 124° 54'.  
TSIASSEM, a kingdom of the island of Java, on the north coast, E. of Carawang.  
TSIBBA, a town of Japan, in the island of Niphon; 30 miles E.S.E. of Jedo.  
TSI-CHU, in Botany, the name of a Chinese tree, which furnishes the liquor of which they make their celebrated varnish.  
TSIEN, in Commerce, a weight in China. The Chinese weigh gold and silver by the gin or catty, of 16 liyang or tales; and the liyang is subdivided into 10 tsions or maces, 100 fenwans or candareins, and 100 lis or cafs. The gin is the Chinese denomination for this weight, and the catty that of the European. See TALE.  
TSIEN-UEY, in Geography, a town of Chinese Tartary; 40 miles S.W. of Ning-yuen.  
TSIERIBON. See CHERIBON.  
TSIHA, a town of Thibet; 48 miles W. of Conchbudong.  
TSIKUMA, a town of Japan, in the island of Niphon; 88 miles W. of Meaco.  
TSILI, a town of Corea; 35 miles W. of Sing.  
TSILKANI, a town of the principality of Georgia, in the province of Carduel; 20 miles N.W. of Teflis.  
TSILON-PALHASIN, a town of Chinese Tartary, in the country of the Monguls; 13 miles S. of Oulan.  
TSIM-YUEN, a town of Corea; 650 miles E.N.E. of Peking. N. lat. 42° 28'. E. long. 120° 54'.  
TSIN, a city of China, of the second rank, in Chen-fi; 620 miles S.W. of Peking. N. lat. 34° 35'. E. long. 105° 24'.—Alfo, a city of China, of the second rank, in Hou-quant; 645 miles S.W. of Peking. N. lat. 26° 36'. E. long. 109° 2'.  
TSIN, or Tsin, a town of Corea; 188 miles S.S.E. of King-ki-tao. N. lat. 34° 52'. E. long. 127° 44'.  
TSIN, in Natural History, the name given by the Chinese to a stone which they make very use of in their manufacture of porcelain ware. It is of a deep blue colour, much resembling Roman vitriol in appearance, and is found in lead-mines, and supposed to contain some particles of lead; its effects being the same in the porcelain manufacture as those of cerufs, or white lead, in making the other colours penetrate into the substance of the veflils. The deep violet colour that we see so beautiful on the china-ware, is usually made with this stone. They find it about Canton and Peking; but the latter place affords the best, and it sells at greatly the best price.  

The painters in enamel melt this stone in their way, and use it very much; they form many beautiful works, by laying it upon silver; but it is apt to come off in time. When the tsin is used in the porcelain manufacture, it is only used to the vases that pass a second baking, and are intended as the beft kinds.  

The tsin is prepared by only beating it to powder, not rolling it in the common way. They mix the powder with large quantities of water, and flirring it together, they let it subfide a little, to separate any earthy or extraneous matter that might be among it. They then let the powder subfide. The water which is thrown away has no colour from this matter, and the powder itself is not of that fine blue it was in the lump, but of a pale afh-colour; but this recovers all its beauty when it is laid on the china and baked. The settlement taken from the water is dried and preferred in powder, and when it is to be used, they only mix it up with gum-water, or a solution of glue, and lay it on with a pencil. Obfer, fur les Coutumes de l'Asie.  

TSIN-NAN, in Geography. See TSI-NAN.  

TSINCHAN, a town of Corea; 13 miles N.W. of Sing.  

TSIN-CHOUI, a river of China, which runs into the Yuen, near Meyang.  

TSINEH, a town of Asiatic Turkey, in Natolia; 16 miles W.N.W. of Mogila.  

TSING, a city of China, of the second rank, in Chan-fi; 267 miles S.S.W. of Peking. N. lat. 36° 42'. E. long. 112° 24'.—Alfo, a lake of China, in Kiang-nan, 22 miles in circumference; 45 miles N. of Hoai-ngan.  

TSING-HING, a city of China, of the second rank, in Yen-nan; 1162 miles S.S.W. of Peking. N. lat. 24° 47'. E. long. 102° 36'.  

TSING-KIANG, a town of China, in Kiang-nan, on the Yang-tze river; 50 miles S.E. of Yang-teou.  

TSING-LAN-OUEI, a town of China, in Hou-quant, near the source of the river Yuen; 25 miles S.W. of Hoang.  

TSIN-KIEN, a river of China, which runs into the Hoang; 12 miles E.S.E. of Yen-chou.  

TSIN-NING, a city of China, of the second rank, in Chen-fi; 585 miles W.S.W. of Peking. N. lat. 35° 36'. E. long. 103° 25'.  

TSINO, a town of Japan, in the island of Awafi; 10 miles N. of Awafi.  

TSINRAMA, a town on the west coast of the island of Celebes. S. lat. 4° 40'. E. long. 119° 14'.  

TSIN-TCHUEN, a town of Corea; 40 miles S.E. of Hoang-teou.  

TSIN-YANG, a river of China, which rises near Tch'i-hia, in Chan-tong, and runs into the Eastern fea, near Fou-chia.  

TSIN-YUEN-OUEI, a fortrefs of China, in Chen-fi, near the great wall, on the river Hoang; 75 miles N. of Lingtao.  

TSISA-
TSISAGATA, a town of Japan, in the island of Nippon; 110 miles W. of Meaco.
TSISIR, a town of Thibet, now in ruins. N. lat. 34° 14'. E. long. 96° 19'.
TSITA, a lake of Thibet, 45 miles in circumference. N. lat. 33° 32'. E. long. 99° 39'.
TSITCHICHAR. See TICCHICAR-HOTUN.
TSIURAC, a river of Natalia, which runs into the Meinder, at Tarharbeh.
TSO, a city of China, of the second rank, in Pe-teche-li; 22 miles S.S.W. of Peking. N. lat. 39° 32'. E. long. 115° 39'.—Allo, a city of China, of the second rank, in Quang-fi; 930 miles S.S.W. of Peking. N. lat. 22° 42'. E. long. 106° 49'.
TSO-CHOU, a town of Corea; 55 miles S.E. of Kang-tcheou.
TSOKAMA, a town of Japan, in the island of Nippon; 170 miles W. of Meaco.
TSOL-ABAD, a town of Asiatic Turkey, in Caramania; 32 miles S.W. of Akhehr.
TSONDUE, a town of Thibet; 7 miles W. of Painom-Jeung.
TSONG-HE, a town of Corea; 10 miles N. of Hoang-tcheou.

TSONG-KING, a city of China, of the second rank, in Se-tchuen; 837 miles S.W. of Peking. N. lat. 30° 38'. E. long. 103° 23'.
TSONG-MING, a town of China, in the island so called. N. lat. 31° 45'. E. long. 102° 51'.

TSong-Ming, or Ts'ing-ming, an island near the coast of China, in the Eastern sea, at the mouth of the Yang-tfe river, belonging to the province of Kiang-nan, about 50 miles in length, and 10 in breadth. This island was formerly a place of banishment for criminals, to whom some poor Chinese families resorted, and they divided the lands amongst them; but not being able to clear all the land they had appropriated to themselves, called other families from off the continent to their assistance, and yielded to them for ever a part of the lands, on condition that they should pay annually, in divers goods, a rent proportionable to their harvest. The country is divided by an infinite number of canals, that have high banks to defend it from inundations, for the land is level, having no hills; the air is healthful and temperate, and the country agreeable. Here are large towns scattered about the island, at convenient distances, wherein is a great number of shops, well furnished with all manner of necessaries and conveniences of life; and, diversified between each town, there are as many houses about the country as there are families employed in tillage. The highways are very narrow, and are bordered with little shops that sell refreshment to travellers; and, indeed, one would imagine the whole island to be one exceeding large village. Here are no wild fowl, but great numbers of large geese, ducks, hens, hogs, and buffaloes, but these latter are used only for tillage. The land is not alike throughout the island, the produce of it being very different; that towards the north is not cultivated, but the reeds which grow here naturally produce a considerable revenue; as there are no trees in the whole island, they use part of these reeds to build houses in the country; the other part serves to burn, and supplies fuel not only for the whole island, but also for some parts of the neighbouring continent. The second fort of land is that which extends from the first quite to the sea on the south side; this produces two crops every year; one of grain, which is generally in the month of May, the other of rice, or cotton; of rice, in September; of cotton, a little later:

TSU, a city of the first clafs in China, in the province of Fo-kien, and reckoned one of the most beautiful cities in China, on account of its situation, extent, trade, triumphal arches, temples, and its well-paved streets. It has in its district seven cities of the third clafs. In its neighbourhood is a bridge remarkable for its extraordinary size, and the singularity of its construction. It was built at the expense of one governor. It is wholly built of the same kind of blackish stone, without arches; but it has above 600 large stone pillars, which terminate on each side in an acute angle, the more easily to break the violence of the current. Five arches of equal size, laid transversely from one pillar to another, form the breadth of the bridge; of these there are 1000, all of the
fame size and figure. On each side there are buttresses or props, constructed of the fame kind of stone, on the tops of which are placed lions on pedestals, and other similar ornaments. This is merely one part of the work,—that which is between the small city of Lo-yang and the castle built upon the bridge: for beyond the castle there is another part, equally stupendous with the first.

TSUGARA, a town of Japan, in the island of Niphon; 45 miles W.N.W. of Nambu.

TSUGARA, a town of Japan, in the island of Niphon; 60 miles N. of Jedo.

TSU1-TSANG, a town of Corea; 40 miles W.S.W. of Sing.

TSUKUKI, a town of Japan, in the island of Niphon; 36 miles N.N.E. of Jedo.

TSUNTNITZ, a town of Croatia; 16 miles W. of Damianovitz.

TSUN-Y, a city of China, of the first rank, in Setchuen; 860 miles S.W. of Peking. N. lat. 27° 38'. E. long. 106° 35'.

TSUR. See TSB.

TUA, in Ancient Geography, an estuary on the south-eastern side of the island of Albion, between the estuary Varis, or Firth of Tyne in Sunderland, and the mouth of the river Cenius, and the Spaï, in the shire of Elgin. The Tua was therefore Cromarty, or Murray Firth.

TUA, in Geography, a river of Portugal, which runs into the Duero, 15 miles N.W. of St. Joao de Pefiqueira.

TUABO, a town of Africa, in the kingdom of Jaen, on the side of the Senegal. N. lat. 14° 56'. W. long. 10° 8'.

TUACA, a town of Africa; 10 miles S. of Mombasa.

TUAK, a small island in the Red sea, about 12 miles from the coast of Arabia. N. lat. 5° 58'. E. long. 41° 58'.

TUAM, a post-town of the county of Galway, Ireland, which is represented in the "New Traveller's Guide for Ireland," as "a large, populous, well-built town;" but which Dr. Beaumont calls, though an archiepiscopal see, a very poor city. It may have been improved since the publication of Dr. Beaumont's work, but the other account must be received with caution, especially when it speaks of "byelanes and alleys thickly inhabited by an industrious populace and working mechanics." It may, however, have a considerable retail trade, and may have derived great advantage from the introduction of the linen manufacture into its neighbourhood. The archbishop's palace is a spacious, venerable structure. The cathedral is a neat, but not extensive, edifice, which serves also for the parish-church. Tuam lost its privilege of being represented in parliament at the Union. It is 93 miles W. from Dublin, and 16 miles N. by E. from Galway.

TUAM, an archiepiscopal see in Ireland, being the lowest in dignity of the four, and having the smallest jurisdiction; the number of benefices in this province being only 87, whilst in Armagh there are 419, in Dublin 252, and in Cashel 362. The fee of Tuam contains the greatest number of acres of any fee in Ireland, extending over a great part of the counties of Galway and Mayo, and including a part of Roscommon; yet such is the want of cultivation, and the poverty of the country, that it was found necessary to unite the bishopric of Ardagh in the province of Armagh, to enable the archbishop to support the dignity of his office. The number of parishes is 89, forming 23 benefices, and having 24 churches. The chapter consists of a dean, a provost, an archdeacon, and eight prebendaries. The infragran biphories are those of Clonfert, Elphin, and Killalla.

TUAP, a town of New Navarre; 160 miles S. of Cote Grande.

TUARIK, a people of Africa. The west and south of Fezzan, says Mr. Horneman, is inhabited by the Turak, a mighty people, who border south-west on Bornou, south on Bornou, Soudan, and Tombuctoo, eastward on the country of the Tibbou and Fezzan, northward on part of Fezzan and the Arabs who live behind the regions of Tripoli, Tunis, and Algiers, and westward on the great empire of Fez and Morocco; of whom a few colonies are found in Sockna, Angala, and Siwwah; in such places, the language of the Turak is the only one spoken by the inhabitants. The Turak are divided into many nations and tribes, who all speak the same language. The Turak of Hagara and Kolluvi are thin in growth, rather tall than short, their walk swift but firm; their look stern, and their whole demeanour warlike. Cultivated and enlightened, their natural abilities would render them perhaps one of the greatest nations upon earth. Their character, particularly that of Kolluvi, is much esteemed. The western tribes are white, as much as the climate and manner of living will admit. The Kolluvians who reached the region of Asien, and conquered Agades, and mixed with the nation, are of different colours, many of them black, but their features are not like those of negroes. The Hagara and Muktara tribes are yellowish, like the Arabs: near Soudan there are tribes entirely black. They are not all Malomctans. In the neighbourhood of Soudau and Tombuctoo live the Tegama, who are white and pagans: they carry on a commerce between Soudan, Fezzan, and Gadamess. Their caravans give life to Mourzouk, which without them is a desert; for they love company, song, and music. The greater part of the eastern Turak lead a wandering life.

TUAT. See TWAT.

TUB, is used as a kind of measure to denote the quantity of divers things. A tub of tea is a quantity of about 60 pounds. A tub of camphor is a quantity from 56 to 80 pounds. A tub of vermillion from 3 to 4 cwt.

TUB, Cheesfs, in Rural Economy, that fort of large tub which is employed in the making of cheese, which, in some districts, is wetted or washed with cold water before it is used, to prevent the milk from flicking to the wood.

TUBS, in Gardening, a sort of strong upright boxes, calculated for containing large green-house exotics, and other potted plants and trees, when grown too large for the pots. These tubs are made by the cooperers proper for this purpose, somewhat in the garden-pot form, a little wider at top than at bottom, from a foot and a half to two feet and a half deep; the width in proportion; constructed of the strongest, thickest planks and bottoms, and well hooped with iron, and with two iron handles at top, by which to remove them; the handles being strong, and generally hooked, especially in very large tubs, in order to receive a pole in each occasionally, that the tube and plant together may be more readily moved. The bottom of the tubs have auger-holes bored in different parts, at regular distances, by which to discharge the superfluous moisture, after watering, &c.

In tabbing large-grown plants, they should be removed from their present pots, with the balls of earth about their roots entire; and having earthed the bottom parts of the tubs, the plant should be set in with its whole ball of earth, filling up properly around, and an inch or two over the top of the ball, with more fresh mould, and then watering. See SHIFTING OF PLANTS, and POTTING. 
TUBA, in Geography, a river of Russia, which runs into the Elbe, 16 miles S.W. of Abakan, in the government of Kolivan.

TUBAI, one of the small Society Islands, in the South Pacific ocean; about 12 miles from Bolabola. S. lat. 16° 12', W. long. 151° 44'.

TUBANSKA, a town of Russia, in the government of Irkutsk; 44 miles N.W. of Irkutsk.

TUBANTES, in Ancient Geography, a people of Lower Germany, on the other side of the Rhine. According to Cluver, they at first inhabited the country now called the counties of Ruvenberg and Lippe; and from hence they traversed the territory which lies between the Rhine and the Sela.

TUBAON, in Geography, a town on the north coast of the island of Java. S. lat. 5° 50'. E. long. 112° 14'.

TUBBAULEH, a town of Hindoostan, in Lahore; 10 miles S.S.W. of Callanore.

TUBBER, in Mining, a name given in Cornwall to that mining instrument, which is in other parts of England called a becle.

TUBBER-Men, in Cornwall, the people who work with this tool, and who are, from its other name of becle, called in other places becle-men.

TUBBERMORE, in Geography, a post-town of the county of Londonderry, Ireland, which is 90 1/2 miles N. by W. from Dublin.

TUBE, TUBUS, pipe, conduit, or canal; a cylinder, hollow within and outside, either of lead, iron, wood, glass, or other matter, for the air, or some other fluid, to have a free passage or conveyance through.

The term is chiefly applied to those used in physics, astronomy, anatomy, &c. On other ordinary occasions, we more usually say pipe.

In the Memoirs of the French Academy of Sciences, M. Varignon gives a table of the proportions necessary for the diameters of tubes, to give precisely any determinate quantities of water. The result of his piece turns upon these two analogies; that the diminution of the velocity of water, occasioned by its friction against the sides of tubes, are as the diameters; the tubes being foppoped equally long; and the quantities of water issuing out of the tubes, are as the square roots of their diameters, deducting out of them the quantity each is diminished.

For the tubes of barometers and thermometers, see Barometer and Thermometer. For the ascent of liquors in capillary tubes, see Ascent and Capillary.

Tubes, in Astronomy, are sometimes used for telescope (which see); but more properly for that part of it into which the lenses are fitted, and by which they are directed and used.

The goodness of the tube being of great importance to that of the telescope, we shall here add its structure.

The Construction of a Draw-tube for a Telescope. — The chief points to be regarded here are, that the tube be not troublesome by its weight, nor liable to warp and disturb the position of the glass; so that any kind of tube will not serve in every case: but,

1. If the tube be small, it is best made of thin brass plates covered with tin, and formed into pipes or draws, to slide within one another.

2. For long tubes, brass or iron would be too heavy; for which reason, some chafe to make them of paper, thus: a wooden cylinder is turned, of the length of the paper to be used; and of a diameter equal to that of the smallest draw. About this cylinder is rolled and pasted paper, till it be of a sufficient thickness; when one tube is dry, provide others after the same manner; still making the last serve for a mould for the next, till you have enough for the length of the tube desired. Lastly, to the extremes of the draws are to be glued wooden ferris, that they may be drawn forth the better.

3. Since paper draws are apt to swell with moist weather, so as to spoil their sliding; and in dry weather to shrink, which renders them loose and tottering; in both which cases, the situation of the lenses is easily disturbed; the best method of making tubes is as follows: glue parchment round a wooden cylinder, and let the parchment be coloured black, to prevent the reflected rays making any confusion. Provide very thin flits of beech, and bending them into a cylinder, glue them carefully to the parchment; cover this wooden case with white parchment, and about its outer extreme make a little ring or ferris: after the same manner make another draw over the former; and then another, till you have enough for the length of the tube.

To the inner extremes of each draw, fit a wooden ferris, that the furious rays, striking against the sides, may be intercepted and lost. In those places where the lenses are to be put, it will be proper to furnish the ferris with female screws. Provide a wooden cover to defend the object-glares from the dust, and putting the eye-glares in its wooden ferris, fasten it by the screw to the tube. Lastly, provide a little wooden tube of a length equal to the distance the eye-glares is to be from the eye, and fit it to the other extreme of the tube.

Tub, or Pipe, among Florists, is that part of a fine flower which has something of a straw-like pipe or opening; and which, to constitute a good flower, in some sorts, as those of the auricula and polyanthus, should stand exactly in the centre of the blossom, and have a truly round or circular form; be well filled with chives or little thread-like parts, something in the manner of a brush at their points, rising even with the face of the pip or blossom; as when only the styme or pointal rives like a pin, without being surrounded or encompassed with the chives to the fame height, the flower is said to be pined, and displays a chasm or vacancy, which is so very unpleasant to the eye of the curious in flowers, that though, in many other respects, such flowers may have good properties, yet falling in this central perfection and beauty, nothing else can atone or make up for it; and such flowers are, of course, held in but small estimation by the florist. See THUMB and TRUSS.

Tubes, in Artillery, are instruments used in quick firing, made with us of tin; their diameter is two-tenths of an inch, so as just to enter into the vent of the piece; their length is about five or six inches, with a cap above, and cut slanting below in the form of a pen, and the point is strengthened with some folder, that it may pierce the cartridge. Through each tube is drawn a quick-match, and the cap is furnished with mealed powder, moistened with spirits of wine. To prevent the mealed powder from falling out by carriage, a cap of paper is tied over it, which is taken off when used; but of late this cap is made of flannel, steeped in spirits of wine, and with saltpetre dissolved in it; and
there is no occasion to take it off, because it takes fire as quick as loose powder.

The French use a small reed, to which is fixed a wooden cap, and they are about two inches long, filled with meal powder, moistened with spirits of wine, and a small hole is made through them of the size of a needle, through which the fire darts with great violence, and gives fire to the cartridge, which must be pierced before-hand with the priming-iron.

These tubes may be kept a great while without being spoiled; but piercing of the cartridge retards the quickness of firing. Muller's Art. p. 293.

TUBE, Alimentary. See Duct.

TUBE, Euftachian, or Trumpet, in Anatomy, a canal of communication between the throat and the tympanum. See EAR.

TUBE, Euftachian, Disease and Obstructions of, in Surgery. These are often a cause of a considerable degree of deafness, because it is necessary for perfect hearing, that air should be conveyed from the mouth through this passage into the cavity of the tympanum, which now can no longer happen.

A degree of deafness generally attends a severe cold, which is accounted for by the Euftachian tube being obstructed with thickened mucus. Mr. Saunders tells us, that the obstruction most frequently arises from syphilitic ulcers in the throat, or sloughing in the cymalge magna. The deafness comes on when such fores are healed, that is, when the obstruction is complete. The deafness of a nasal polyposis into the pharynx, and enlarged tonsils, have also been known to close the tube.

When the Euftachian tube is obstructed, the patient cannot feel the membrane tympani crackle, as it were, in his ear, on blowing forcibly with his nose and mouth flopped. Previous ulceration, or disease, of the throat, will sometimes aid in facilitating the diagnosis.

When the Euftachian tube is obstructed with mucus, it has been proposed to employ injections, which are to be thrown, by means of a syringe and catheter, into the guttural orifice of that canal. This operation, however, is alleged to be always attended with trouble; and when the os sphenoidum inferius happens to be situated near the floor of the orbit, the introduction of any instrument like a female catheter would be impracticable. Richerand Nofographie Chirurgicale, tom. ii. p. 131. edit. 2.

Mr. A. Cooper had noticed, that hearing was only impaired, not lost, when suppurations in the tympanum had injured, and even destroyed the membrane tympani; and that the degree of deafness by no means equaled what resulted from an obstruction of the Euftachian tube. Hence, when the tube was permanently obliterated, he conceived that a small puncture of the membrane tympani might be the means of enabling the patient to hear. Mr. A. Cooper practised the plan with success, and others have imitated him with the same result.

The operation consists in introducing an instrument, resembling a hydrocele trocar, but curved, into the meatus auditorius externus, and pushing it through the anterior and inferior part of the membrane tympani; a place rendered most eligible, on account of the situation of the chorda tympani and manubrium of the malleus, patts which should be left uninjured. The instrument must not be introduced far, lest it should wound the vascular lining of the tympanum, and cause a temporary continuance of the deafness, by an effusion of blood. When the puncture is made, in proper cases, and in a judicious manner, hearing is immediately restored. A small hole in the membrane tympani now conveys the air into the cavity of the tympanum, answering the same purpose as the Euftachian tube.

The surgeon will be able to operate with more cafe, if he take care to lessen the curvature of the meatus audito-rius, by drawing upward the external ear.

There is some chance of a relapse, in consequence of the opening closing up. This consideration has led Richerand to propose making the aperture with cautie, so as to destroy a part of the membrane. (Nofographie Chirurgicale, tom. ii. p. 132. edit. 2.) The suggestion is not, however, likely to be adopted, on account of the inconveniences of applying cautie within the ear. Mr. Saunders is an advocate for making the opening large. This gentleman relates, that he instantaneously restored hearing in one case, in which the patient had been deaf thirty years, in consequence of a loss of part of his palate by syphilis. Mr. A. Cooper's cases are in the Philosophical Transactions for 1802.

Puncturing the membrane tympani has been attended with some degree of success in France, as well as this country. It is not to be disembarrassed, however, that there are numerous failures. We are informed that professor Dubois has done the operation in four instances, without success. Richerand Nofographie Chirurgicale, tom. ii. p. 132.

In most cases, the patients who have been benefited, are said to have experienced pain just after the trocar was withdrawn. The organ, in consequence of not being accustomed to sound, had become so extremely sensitive, that it could not bear the gentle impression of the parasporous vibrations; and the patient's first request, after the perforation was made, was that they who were near him might speak softly. This excessive tenderness of the sena gradually subsides.

TUBES, Fallopian, or Trumpets, in Anatomy, two small canals, forming communications between the cavities of the uterus and abdomen, and serving to convey the germs of the new beings, in generation, from the ovaries to the uterus. See GENERATION.

TUBE, Glafs. See GLASS-TUBE, LAMP-BLOWERS, AND HERMETICAL SEAL.

In order to bend a glass-tube, if the glass is pretty thick, and the bore narrow, it may be held in the weaker part of the lamp-flame, and softened for about an inch or two of its length, and then bent slowly into any required shape. But if the tube be wide, and the glass thin, this mode of bending will entirely destroy the cylindrical form of the bore at the part that is bent, making a double flattening. In order to avoid this, first seal up one end of the tube, and then, whilst bending it at the required part, blow steadily and gently into the open end; and the preльure of the breath will counteract the falling in of the sides of the bending portion, and keep the bore cylindrical. The closed end is then cut off by the file; for which purpose, make a deep scratch with one edge of a fine three-cornered file on the part intended to be cut, then break the tube with a smart pull in that direction in which the scratched part will be outermost; and it will in general separate accurately at this point.

In order to join two tubes, heat them both in the flame, and apply them together, when quit hot, turning them round to finish the condensation; or else, to avoid the thick ring of glass which this produces, previously close one end of one tube, and when the two ends are fully joined, blow into the open end of the other tube, and pull them out a little at the point of juncture, till an equal cylinder is formed.

To form a bulb (e.g. of a thermometer), chuse a tube of
of a very equal bore, seal the end in the usual manner, and
to collect a greater mass of glafs at the end, press upwards
on it while quite hot with any iron instrument, so as to con-
solidate and shorten it a little; let it remain in the hottest
part of the flame, till the lump of glafs is quite white hot;
then remove it, put your lips to the open end without loss of
time, holding it with the hot part lowest, and blow moder-
ately and readily. The lump of hot glasfs will immediately
open into a bulb, the fize of which may be regulated at
pleafure.

TUBE, Stenatorphonic and Torricellian. See the adjectives.

TUBEIPILLY, in Geography, a town of Hindooftan, in
Myföre; 20 miles W. of Chinhala Balabarun.

TUBEL, a word used by some chemical writers to ex-
press scales of copper or brads.

TUBELDIE, in Geography, a town of Dar-Fur; 180
miles S. of Cobbe.

TUBER, or Tuberole, in Botany, a kind of round
turgid root, in form of a knob or turnip.
The plants which produce such roots are hence de
dominated tuberofls, or tuberous plants. See Tuberous Roots.

Tuber, an old Latin name for a fort of excercifence,
appropriated alfo to several things of the fungus tribe.
Its derivation is from tumeo, to fwell. Botanists have
retained this name for the preuent genus, to which it originally

Sm. Prodr. Fl. Græc. Sibth. v. 2. 351. Jüff. 3. Lami-
arch. Lull. t. 887.—Clafs and order, Cryptogamia Fungi.

Nat. Ord. Fungi.

Eff. Ch. Roundifh, fhefy, folid, clofed; its fubfcance
variegated with veins bearing feeds.

(T. brumale, pulpa obfcura odorata; Mich. Gen. 221.
t. 102. Tubera; Tourn. Infl. t. 333. T. terræ; Ger. Em. 1583.)—Blackift, rough with prominent warts.—
Found under the surface of the ground in molt parts of
Europe, where the fof is light and dry; as well as in Japan,
and the East Indies. Dogs are taught to find this fungus
by the fcm, and to scratch out of the earth. It is
brought to table, either simply boiled, or flewed in
various forms. The French and Italians introduce tubules into
different made dishes, sauces, pies, &c.
They are reported to have a stimulating, or aphrodisfical quality, which,
whether imaginative or not, perhaps renders them more po-
pular than their flavour, which is trifling. The fize of this
fungus is about that of a walnut in its outer coat, but the
surface is irregularly tumble, and harph to the touch from
innumerable sharp warts. The inner fubfcance is grayift,
or pale brown, with numerous curved branching veins,
lodging the minute feeds. No figns of a root are obser-
vable. They are faid to be several varieties of colour in this
species.

t. 479. Perf. n. 2.—Blackift, fmoofh. —Native of France.
Like the foregoing in fize, and general figure; but its
surface is smooth, the inner fubfcance rather soft, and the
fcent musky. By drying the coat becomes wrinkled.

Bulliard.

3. T. grifum. Grey Truffle. Perf. n. 3. (Truffle
grie; De Borch Truffles du Piemont, 7. t. 1. 2.)—
Roundifh, irregular, smooth, foft, grayift-afhcoloured.
—Native of Piedmont, in a light, moderately moift, fof.
The fize of the two preceding, but more irregular in fhape,
of a foapy texture and light colour, with a frong fcent of
garlick.

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Perf. n. 4. With. n. 2. Soweb. Fung. t. 310. (Bi-
anchetti; De Borch Truffl du Piemont. 6. 7.) Lycopoldon
bibboum; Dickf. Crypt. falc. 2. 269.)—Light reddifh-
brown, roundifh, half above ground; veins rufty-coloured.

—In woods, in England and France, also in Greece, but
partly furk in the earth. The outside is smooth, turning
more yellow in drying; the inner fubfcance refembles rhu-
bras. Its flavour is laid to be disagreeable.
Dr. Withering describes a variety, or more probably, as
he observes, a different species, whose internal fubfcance is
uniform, like cork, of the hue of tanned leather; the sur-
face knobby and pitted, hairy in the pits. The whole mafs
perforated by items of glasfs; fo that it must have been
above ground in a soft flate.

(T. album); Perf. n. 4. Lycopoldon effumum; Wulf.
in Jacq. Coll. v. 1. 349.)—Nearly globular, smooth,
brown, or blackift; fpongy within; entirely subterraneous.
—Plentiful in Carinthia and Carniola from May to Auguft.
These have little fette or fmall, but are used much for the
table. When young the surface is whithif and fcaly, but
gradually becomes brown or blackift. Their fize is equal
to a chefut or walnut. Perhaps, as Perfoon thought, this
may not be a different species from the laft.

6. T. cernum. Baltard Truffle. With. n. 3. (Tu-
bera cernum; Lob. Fc. v. 2. 276. Lycopoldaltrum tu-
berum arifon fulvum, cortice duro crefto et granulato,
medullā ex albo purpuraceore, femine nigro caffro
Mich. Gen. 220. t. 99. f. 4.)—Globular, finely granu-
lated, rather fold, finally burting; powdery in the centre.
—Found barelely funk in the ground, in several parts
of England, as well as in Bohemia and Silefia, about Sep-
tember. The diameter is about an inch and a half; the
outside tawny; inner fubfcance, or nucleus, purplifh.

7. T. folidum. Hard Truffle. With. n. 4. (Lyco-
perdon cepae facie; Vaill. Parif. t. 16. f. 5. 6.)—
"Glo-
bular but compressed, (rather depreffed,) brown, reticu-
lated, very firm; blue-black within." — Found in Dr.
Withering's park at Edgbaston, near Birmingham, under
an oak-tree by the pool, in Auguft. This had a short
root, as Vaillant represents it, and appears to be, as Mr.
Sowerby fuppofes, only a nearly felfile variety of his Lyco-

8. T. radicatum. Rooted Truffle. With. n. 5. (Lyco-
perdon cernum; Bolt. Fung. v. 3. t. 116. L. fpadie-
ceum; Dickf. Crypt. falc. 1. 25. Lycopoldaltrum effu-
crum, altius radicatum, pulpa atro-purpurae, cete lacera,
veluti punctata; Mich. Gen. 220. t. 99. f. 3.)—Roundifh,
depreffed, cracked in the surface, with a thick fhort root.
—Found on heaths, and in woods, in Italy and England in
the fummer, but rare. Two or three inches in diameter,
solid, never burting, nor becoming internally powdery.
The outer skin is brown, or olive, craking into angular
portions, but not wary. Inner fubfcance purplifh, veined
with black; finally quite black. Apparently different from
Lycopoldon aurantiacum of Bulliard, t. 270; fo that the fine
infone in his figure may not be altogether, as Bolton fays,
"conjeftural," it may reprefent the powdery feeds, eloping
from holes eaten by insects, as Bolton himfelf fuppofes.

Tuber, or Tuberefty, in Surgery, is used for a knob or
bumb growing naturally on any part; in opposition to
tumours which rifé accidentally, or from a difeafe.

The fame term is also used for a knot in a tree.

TUBERA TERRÆ. See Truffles.

TUBERAN, in Geography, a town of Perfia, in the
province of Kerman; 171 miles N.E. of Schiras.
TUBERCLE, a small, hard, superficial tumour, circumseribed, and permanent, or suppurating partially.—Bate- 
man’s Synopsis of Cutaneous Diseases.

TUBERCULA QUADRIGEMINA, in Anatomy, a part of the 
brain. See Brain.

TUBERCULARIA, in Botany, so called from its small 
tuberculat figure.—Tode Fung. Mecklern. f. 1.18. Per. 
Syn. Fung. 111. Obf. Mycol. f. 1. 78.—Nata and 

Eff. Ch. Roundish, compact, smooth, permanent, solubile 
in wet.

Mycol. n. 138. f. 1. 79.—Burfting from the cuticle 
of trees, crowded, even, red; with a difcoide permanent 
base.—On decayed branches of Maple.

t. 4. f. 30. Perf. n. 2. (Tromella purpurea; Lion. Sp. 
Pl. 1626. Hudf. 565. Licheniobes tuberculatam amoeni 
purpuream; Dill. Mufc. 127. t. 18. f. 6.)—Aggregate or 
feattered, bright red, corrugated, with a thick pale base.

Very common on dead or dying branches of trees, efpe- 
icially currant-bushes, where it becomes conspicuous by its

n. 3.—“Roundish, dull red, with a corrugated granulated 
surface.”—On the branches of Sycamore, or other species 
of Acer, but rare. Its colour is brownish and opaque; 
yellowish within. Perfon.


“Crowed and confluent, of a flefly red brick-colour, small, 
oblong, angular or flatthiff.”—On dry branches of the 
Common Maple. Coloured much like T. vulgaris, but smaller, 
and lofter.


“Scattered, small, funk in the bark, flatthiff, very smooth, 
bright red.”—On the bark of the chefnead-tree. Half the 
size of T. vulgaris, and fearcely projecting out of the 
cuticle of the bark. Its colour externally is like that of a straw-
berry, of the infide yellowish, firm.

Mycol. n. 137. f. 1. 78. (Lichen roseus; Schreb. Lfp. 
140.)—Scattered, loose, irregularly globofe, rofe-coloured.

—On trees, especially adhering to Lichen flcllarius, parietius, 
&c. We have found it on the former at Hetherfet, near 
Norwich. The bright-pink little maffes, of which this fpe- 
cies confifts, might be taken for the tubercules of fome Lichen; 
but they diffolve in wet.

TUBERCULUM ANNULARE, in Anatomy, a part of 
the brain. See Brain.

TUBERCULUM Loweri, a small eminence in the right au-
ricle of the heart. See Heart.

TUBERNICENSE OFFIDUM, Tubernoke, in Ancient 
Geography, a town of Africa, built in form of a crescent, 
between the fummits of a mountain, 7 leagues S.W. of 
Tunis.

TUBERNOBI, in Geography, a town of Tunis, anciently 
the fee of a bishop; 21 miles S.E. of Tunis.

TUBEROS, in Botany, See POLIANTHES. This Eng-
lish name is not compounded of tube and rofe, as most people 
would naturally conceive, but originates in the old ap- 
pellation of Tubero, or Tuberosus, Hyacinth, Hyacinthus tu-
berofus; alluding to the tuberous root, and the reemance 
of the flower to a Hyacinth.

TUBEROUS Roots, in Gardening and Agriculture, 
such as conflit of one or more swelled or knobbled tubers, of a 
solid flefly fulblance. In this tribe are comprifed many plants 
of the ornamental flowery kind, and fome efeulents of the 
kitchen garden; as in the former, amone, raphan, 
filpenula, many forts of iris, aconitum, prony, oricho, cy-
clamen, winter-aconit, day-lyl, &c.; fome alfo with bulbo-
tuberous roots, as gladiolus, polianthes or tuberofe, opyrs, 
&c; and of the efeulent tuberous roots are the potatoe and 
Jerufalem artichoke: all of which plants are principally per-
ennial in their roots, being perpetuated annuallly by offsets, 
or cuttings for fets. See Root.

It has lately been fugged, and in many meafure con-
formed by experiment, that, in cultivation, the root of this-
kind, called the potatoe, is liable to have the difeafe termed 
the curl produced in crops of it, by the tubers which are 
ufed for feed-flock or fets having been allowed to become 
too ripe the preceding year; and that this praftice of over-
ripening, being repeated year after year, is the real caufe 
of the difeafe, the vegetative power in the tubers being in 
this way exhausted.

It has been long known to all cultivators of this fort 
of crops, that the usual method of reproducing any particular 
variety of the root is by cuts or fets of the tubers; and that 
this manner of propagation is continued from year to year, 
as long as that particular fort is fifted for, without ever 
thinking of reinvigorating the feed-flock, or tubers for 
planting, by raifing new plants from the real feed; the 
fitness being reproduced only by fowing the true feeds of 
the plant. It is only thus that new varieties are obtained.

But if fets be taken from any particular variety which is 
fifted to be preferred, and if care be exercised that the 
plants fhall have no communication with the farina of any 
of the plants of the fame species in flower, then the produce 
of thefe feeds will probably be the fame with that variety 
from which the feeds were faved; and from the feed-flock 
being renewed, and reinvigorated in this manner, it feems 
likely that the variety fo obtained may, by obferving a pro-
per management, be preferved from this difeafe, or any other 
kind of degeneracy, for any length of time.

This opinion of the over-ripening of the feed-flock for 
the supply of the ensuing year, by allowing it to remain too 
long in the ground, efpeially when planted early, and of the 
repetition and continuance of it rendering the tubers wholly 
uflit for producing vigorous healthy plants, by exhaufting 
their power, being the chief caufe of this difeafe, has however 
been almost uniformly objeented to, as being quite contrary 
to experience in regard to feeds in general, as full ripenefs 
has been confidered the best recommendation of them. It is 
notwithstanding apprehended, that this objeetion arises from 
the taking of an improper view of the matter. For though 
它是 true, that all of what are properly called feeds are im-
proved by being thoroughly ripened; the cuts or fets taken 
from the tubers of this fort cannot, strictly speaking, be con-
lidered as feeds. The planting cuts of this kind of tuberous 
root, is analogous, it is fuppofed, to budding or grafting of 
tubs, being only a fecondary mode of propagation, and con-
sequentially that such an objeetion cannot hold good. Besides, 
the fuggelion is illuftrated and supported by different other 
circumstances and confiderations, as well as by the well-known 
powerful caufe which weakens the vegetative power in the 
tubs,—that of allowing the plants that are intended for the 
supplying of feed-flock for the ensuing year to run to flower, 
and produce feed. This, it is thought, fhould in all caufs 
be prevented, by cutting off the flowers as they appear in 
their embryo flate. In this way, by turning nature from her 
ordinary course, to force her to exert herfelf in another di-
rection, and to throw back into the tubers that portion of 
the vital principle of the plant, which would have been ex-
haufted in the formation of flowers and feeds. Nothing will, 
it is fuppofed, contribute more to prevent degeneracy in this 
fort
sort of tuberous root, and especially of the disease to which it is so liable, than this treatment. See the first volume of the Transactions of the Scotch Horticultural Society.

TUBERSOKE, in Geography, a town of Tunis, anciently the seat of a bishop; 48 miles S.W. of Tunis.

TUBIG, a town on the E. coast of the island of Samar. N. lat. 12° 13'. E. long. 135° 27'.

TUBILUSTRIUM, composed of tubus, trumpet, and tubera. I purify, in Antiquity, a feast or ceremony in use among the Romans. This denomination was given to the day on which they purified their sacred trumpets, as also to the ceremony of purifying them. It was held on the fifth and last day of the feast of Minerva, called quinquatrus, or quinquatria, which was performed twice a year.

TUBINGEN, in Geography, a town of Wurtemberg, situated in a valley on the Neckar, between two hills. An university was founded here in the year 1477, and refounded in the year 1770. Here is a seminary for the study of divinity, and a college for the nobility. The foundation of the town is unknown, but assuredly of great antiquity. It is the origin of the pfalzgrave of Swabia, and though the descent of the ancient palatines of Tubingen be unknown, yet they had their pfalz or palatium, which stood on the spot of the present castle. One of the elder pfalzgraves known at present, lived in the year 1080; and the last of them, W., George Eberhard, died in the year 1631. The two pfalzgraves, Gobs and William, in the year 1342, sold the town to count Ulrich of Wurtemberg. In 1555, duke Ulrich, pulling down the old castle, caused that of Hohen Tubingen, which is the present residence, to be erected, with fortifications. In 1540 the town was damaged by fire. In the thirty years' war it was frequently besieged and taken; and in 1688, was considerably injured by the French; 16 miles S.S.W. of Stuttgart. N. lat. 48° 33'. E. long. 9° 10'.

TUBIPORA, Red tubular Coral, in Natural History, a name given by Linneus to a genus of Zoophyta, in the class of worms; the characters of which are, that its animal is a mereis, and that it is a coral, consisting of cylindrical, hollow, erect, and parallel tubes.

In Gmelin's edition of the Linnean System we have the following species.

Musica. With falciculated combined tubes; the transverse partitions membraneaceous and distant. This is the purple tubipora of Pallas, of which he mentions a variety, or the flexuoso tubipora. It is found in the American, Indian, and Red seas, affixed to other corals or rocks; and is used by the Indians as an antidote to strangury and wounds inflicted by poisonous animals.

Catenula. With parallel tubes, connected into a lamina anamorphosing with a folded wreath. Found on the shores of the Baltic sea.

Serpenis. With cylindrical, erect, very short, distant, axillary tubes; diversiforated at the dichotomous base: the Millepora lilacea of Pallas. Found in the Mediterranean and Northern seas, and on the shores of the Baltic.

Fascicularis. With filiform falciculated tubes; the sides anamorphosing. Found on the shores of Gothland.

Ramosa. With roundish interspaces, and simple, flexuosae, aggregate, confluent tubules of the confluent branches. Found in the White sea.

Pinnata. Dichotomous, erect, with tubules distributed in the form of small feathers. Found in the Mediterranean sea.

Penicillata. Stalky; the top incrustated, and formed of tubules connected towards the base. Found in the Greenland sea, affixed to teftaceae.

Flabellaria. Depressed, flabelliform, with parallel conjoined tubes. Found as the former.

Stellata. With separate tubes, combined in layers or tables, many of these tables being remote, horizontally tubulous, and radiated with sreel on the surface. Found among foraminifers.

Striae. With distant diverging tubes, loose behind and often bent; with tubules small, simple, and horizontal, combined. Found among foraminifers.

TUBNA, in Geography, a town of Algiers, anciently called Thubana. The Arabs bury their treasures under the ruins; 116 miles S.S.W. of Constantina. N. lat. 35° 8'. E. long. 5°.

Tubo, a town on the south coast of Mindanao. N. lat. 7° 49'. E. long. 124° 32'.

TUBOEUF, a town of France, in the department of the Mayenne; 6 miles N.E. of Laflay.

TUBOR TERRAE, a name used by some botanical authors for the cyclamen or low-bread.

TUBUG, in Geography, a harbour on the west coast of Mindanao, much frequented by pirates. Near it is the house of a rajah, strongly palisaded, and defended with twenty swivel guns; 10 miles N. of Pollock harbour.

TUBUHACAN, a town of Africa, in the country of Sugulmeffa; 9 miles from Sugulmeffa.

TUBULARIA, in Zoology, a genus of the Zoophyta class of worms; the characters of which are, that the animal is vegetating and radicated; the head crested with tentacles, generating small eggs; and that the item is tubulous, horny, very simple, or branched, affixed at the bottom, and the animal thralls out at the apex. Among the following species are included several of the tubular corallines of Ellis.

Species.


Ramosa. With branched flanks, and wreathed joints; one of Ellis's. Found in the European sea. The loft tubules fiercely grey.


Fragilis. With dichotomous flanks, and compressed joints. Found in the American sea. White or greenish.


Papyracea. With a very large papyraceous tubule, alternately ramose. Found in the Indian ocean.

Penicillus. With aggregate, simple, radicated tubes, profliurous and penicillated at the apex. Found in the American sea. It is doubted whether this and the last be of this genus.

Acetabulum. With filiform flanks; the terminal pelta or shield inflated, radiated and calcareous. Found in the Mediterranean and American seas. White and soft, and affixed to teftaceae.
**TUB**

**SPLANCHNEA.** With capillary very simple stalks; the terminal pelta smooth and membranaceous. Found in the Mediterranean sea. Of horn-colour.

**CORYNLA.** Sub-ramose, filiform, papyraceous, jointed with ovato-acuminate capsules, and dilatable mouth, and terminated with cylindrical armed tentacula. Found on the shores of Holland and England. Anercaneous and reddish.

**AFFINITIS.** Simple, sub-anastomosed, soft; with the tentacula of the mouth encompassing the papilla attenuated. Found on the English coast, adhering to fuci, and akin to the lani.**

**FABRICATION.** Stellated, with pinnated cirri, and six rays encompassing the mouth. Found on the shores of Norway and Greenland, often in the fissures of rocks. Grey, green, or white.

**LONGICORNIS.** With two fætaceous cirri, longer than the tubule. Habitation unknown.

**MULTICORNIS.** With more than twenty cirri centrally white; body round and hyaline, tubule mace-like. Habitation unknown.

**CAMPANULATA.** With lunated cret; orifices of the vagina annulated; body concealed within the vagina. Found in the flagrant waters of Europe.

**REPENS.** Creted, with cirri on both sides radiated; vagina extended, tubule opaque, procumbent. Found in the flagrant waters of Northern Europe.

**REPTANS.** With lunated cret; body tractile beyond the vagina. Found in the flagrant waters of Europe. Hyaline, soft, with about sixty cinas.

**SULTANA.** With infundibuliform cret, ciliated at the base. Found in the pools of Gottingen.

**STELLARIS.** Creted, with pectinated cirri, brown, annulated cret tubule. Found in the focus of the Baltic sea.

**SIMPLEX.** With eight linear cirri, and conic hyaline tubule. Found in the focus of the Norwegian sea.

**SPALLANZANI.** With five plume cirri, pectinated on both sides, and cylindrical, horny tubules, below incurvated. Found in the Mediterranean sea.

**MEMBRANACEA.** With a double concentric range of fitiones tentacula, and a membranaceous, contractile, vilcid, cylindrical tubule inclosing the inhabitant. Found in calm parts of the Mediterranean; but doubted whether it belongs to this genus.

**TUBULARIA Fossilis, in Natural History,** the name of a species of coral found very often fossil, in Germany and Italy, and composed of a great number of tubes, or longitudinal pipes, often resembling so many worms ranged perpendicularly in the mafs.

They are usually found either in mafses of a lax flone, or in fngle tubules in thofe of the harder and firmer texture. In these two dises this fossil makes two very different appearances; and, according to the different directions in the mafs, or the different views of them that the sections of it place them in, they make a number of very elegant figures.

**TUBULATED FLOWER, Tubulatus flocculus, in Botany,** a term used by authors to express those fmall flowers, a great number of which go to compose one large compound flower. These are called tubulated, by way of distinction from another kind of them, which are, from their shape, called ligulated. The tubulated floccules generally compose the disk, and the ligulated ones the radius of the compound flowers. The tubulated ones are formed into a hollow cylinder, which expands into a mouth at the top, and is divided into five equal segments, which flatten expanded, and in some meafures bent backward.

**TUBULI CONCAMERATI, in Natural History,** the name of a genus of the Tubulus marinus, distinguished abundantly from all the others by its figure and inner structure. They are long shelly bodies, usuallv either of a conic or cylin- dric form, or else resembling the dentes in shape; and sometimes, but that very rarely, they have their smaller end bent and twisted round. They are composed within of a number of hollow compartments, each of which communicates with the next by means of a siphunculus, which runs through the whole length in the manner of the thick nautilus, or the cornu ammon. We know not these in their recent flate at this time, but frequently meet with them fossil in the flones brought from Sweden for pavements, and in some others.

Some authors have called thefe by the name alveoli, confounding them with the conic body found in the belemnite. See ALVEOLUS.

Others have called them pyramidal entrochi, others abelisci marmorei alveolares; and they are the bodies described by Gehrner and Aldrovand, under the names of lapides cuneo cancri, or cancri. Some late authors have called them also polythalamii, and others cone-flones. Klein. de Tubul. p. 7.

**TUBULI Fossilis,** the name given by authors to the cafes or tubes of sea-worms, found buried in the earth.

They are in their native flate of very various kinds, but by different accidents attending them in their accidental one, they are subject to a multitude of other appearances. They are found of very various sizes, sometimes complete, and buried in the flata of earth or fone; sometimes they are more or less perfect, and are immerfed in mafses of the ludus Helmontii, or septaries, and in this flate they make one kind of lapis siringoides, or pipe-flone; but the most beautiful siringoides, or pipe-flones, are the parts of the bottoms of thips, or pofts fixed in the fia, which have been pierced, in their original flate of wood, by these cafe-worms, and afterwards petrifed with the cafes or tubuli of the worms remaining in them.

Of these there are many beautiful specimens on the shore of the island of Sheppy, and in our clay-pits about London and Richmond.

Thole tubuli called dentalia et entalia, are not lefs frequent, and found of various kinds in the clay-pits about London and the hills of Yorkfliire; but they are more frequent in similar places in France and Italy.

**TUBULI Lattigferi, or Calicophori, in Anatomy,** the canals in which the milk is secreted. See BREAST.

**TUBULI Seminiferi,** the innumerable minute canals com- posing the body of the teifs. See GENERATION.

**TUBULI Uriniferi,** the small tubes terminating on the papilla of the kidney. See KIDNEY.

**TUBULI Vermicularis,** a name sometimes used by naturalists for certain small oblong and hollow sea-flones remem- bring worms.

**TUBULUS Marinus, or Canalis, in Natural History,** the name of a genus (according to fome writers) of univalve shell-flies; the characters of which are these: it is of an ob- long figure, terminating in a point, and hollow within, so that it remembles a tube or horn. Thofe are also called by the old writers dentalia, from their remembing the tooth of a dog. See DENTALIUM, CONCHILOGY, AND SHELLS.

It has been a common error of authors to confound under the general name of tubulus marinus, these flones, and thofe very different ones of the vermiculi marini, which make a number of pipes or tubes joined together; thofe, by their number and joinings, have induced a late French author to place them among the multivalve flones, while the canalis are usually single and separate, and can have no title to any clas but the tubular univalve one. Aldrovand obferves, that the tubuli
In Botany, a diminutive, from tubus, a tube, expressing the structure of the fungus in question.—

TUBULINA, in Botany, a diminutive, from tubus, a tube, expressing the structure of the fungus in question.—

1. T. falax. Doubtful Tubulina. Perf. n. 2. Obs. Mycol. fse. 2. 28.—"Opaque, indeterminate, brownish. Receptacles combined at the top into an uniform bark."—

2. T. fragiformis. Strawberry Tubulina. Perf. n. 2. Obs. Mycol. fse. 2. 29. (Tubulifera arctonicae; Jacq. Mie. Anh. v. 1. 144. t. 15. T. Ceratum; Fl. Dan. t. 369. f. 2.)—Nearly globular; first red; then brown; receptacles rather swelling upwards, distinct at the top.—

Found on the trunks of trees, after heavy rains in summer, attracting notice by its likenesses to a large strawberry. When arrived at maturity, it becomes opaque, of a rusty brown. The author above quoted mentions in his Observationes Mycologicae, fse. 2. numerous fungi allied to this, partly observed by himself, and partly described by other authors, which he was doubtful whether to consider as species or varieties. His doubts seem to have been rather increased than diminished when he wrote his Synoq, and therefore we cannot presume to remove them. Among these obscure productions are Spherocephorus fragiformis, Buliard t. 384; and S. cylindricus, t. 470. f. 3, which appear to answer well to the generic character of Tubulina, and to be specifically distinct from T. fragiformis, as represented by Jacquin. Perfon also mentions a Reticulaira multipolosa of Sowerby's Fungi, t. 169, which is an altogether erroneous reference; nor shall we attempt to guess whether it alludes to any thing in that author's t. 399, or any other.

TUBULOSE LEAF, among Botanists. See LEAF.

TUBURBO, in Geography, a town of Africa, in the kingdom of Tunis, supposed to be the ancient Tuburbum. Mahomet, a late bey of this kingdom, planted a great number and variety of fruit-trees in the neighbourhood of this town, which were ranged in so particular a method, that each species was confined to one grove, and thereby removed from all influence of another. In the adjacent valley, where the Mejerda conveys its stream, the fame curious and generous prince erected out of the ruins of a neighbouring amphitheatm, a large mafs

bridge or dam, with proper fufces and flood-gates to raise the river to a convenient height for watering and refreshing thefe plantations. But this, which was too laudable an invention to be fubmit long in Barbary, was soon entirely broken down and destroyed; 16 miles W.N.W. of Tunis.

TUBUS COROUM, in Botany, the inferior, more or less cylindrical, part of a monopetalous corolla, supporting the Limbus; see that article. The tube differs in length, in different genera or species of plants, as well as in shape. A rotate, or wheel-shaped, corolla has the tube necessarily very short, or scarcely any; a funnel-shaped one has the same part elongated, and dilated upward. Sometimes the tube conceals the flamines, which are inferred either into some part of itself, or more rarely into the receptacle; sometimes, indeed very frequently, the flamines project, with the fyle, out of the tube. Its mouth is usually pervers; sometimes hairy; in several genera of the tribe Asperifolius, that part is closed by arched or converging valves, covering the others. The claws of the petals, in a polypetalous corolla, stand in the place of the tube of a monopetalous one, and in some instances are so far connected, at an early period, as really to constitute a tube, subsequently splitting into claws. Examples occur in the order of Proteaceae, which have caused some perplexity, and difference of opinion, in the characters given by different botanists of the plants of that order.

TUCABATH, in Ancient Geography, a town of Africa, in the interior of Libya. Ptolemy.

TUCANA, in Ornithology, a name given by fome to the toucan.

TUCAPEL, in Geography, mountains of Chili, S. of Concepcion. S. lat. 37° 30'.

TUCAYAN, a town on the W. coast of the island of Negros. N. lat. 11° 12'. E. long. 122° 57'.

TUCCA TEREBINTHINA, Sheelab, in Ancient Geography, a town in the interior of Africa, near Affaraus and S.W. of it. Ptolemy.

TUCCABAR, in Geography, a town of Tunis, on the Mejerda; 24 miles W. of Tunis.

TUCCABATCH, a town of the flate of Georgia; 10 miles S.W. of Oakfukee.

TUCCI, Marins, in Ancient Geography, a town of Spain, in Betica, S. of Calulu.

TUCHAN, in Geography, a town of France, in the department of the Aude; 12 miles S. of La Gaffe. TUCHEL, a town of Prufia, in Pomerelia; 25 miles N.W. of Culm.

TUCK of a Ship, a name given to that part of the ship where the ends of the bottom planks are collected together, immediately under the stem or counter. When this part, instead of being incurvated, and forming a convex surface, assumes the fhape of a vertical or oblique plane, it is said to be square; and a square tuck is accordingly terminated above by the wing-tranfon, and below, and on each fide, by the fahion-pieces. Falconer.

Tuck-Rail, the rail which is wrought well with the upper fide of the wing-tranfon of ships, &c. and forms a racket for the purpose of caulkmg the butt-ends of the planks of the bottom.

TUCKABATCH, in Geography, a town of the Creek nation of Indians.

TUCKAHOC CREEK, a branch of the river Choptank, in Maryland.

TUCKAHOL, in Botany, the North American Indian name of a very extraordinary production, found in various parts of the United States, which appears to be a subterraneous fungus, nearly allied to the genus Tuber; see that article.
article. The Tuckahoe is found in irregular, more or less globular or oblong, lumps, from an ounce to thirty pounds in weight, having a brown corrugated bark. Its internal substance is uniform, solid, snow-white, farinaceous, with little or no taint or smell; and has been used by the natives as food. This production is generally found attached to the roots of some tree, especially of the genera Pinus and Quer-
cus, the fibres of which are interwoven with part of its texture, but in process of time are obliterated. Its growth appears to be very slow. In decay the inner substance affumes an acid flavour, and brown colour. Such are some of the particulars of the history of this fungus, for so we preface it to be, which we have received from Dr. Mac
bride of Charlestown, South Carolina; who has lately given a more ample and detailed account of it, with specimens, to the Linnean Society of London.

TUCKAREAH, in Geography, a town of Africa, in Sahara, anciently called Tigava; 166 miles S. of Algiers.

TUCKATPOUR, a town of Hindoostan, in the circuit of Ruttnapour; 18 miles S.W. of Ruttrnapour.

TUCKEA, a town of Hindoostan, in Goondwana; 10 miles W. of Nagpour.

TUCKER, in Rural Economy, a term sometimes applied to a person employed in the business of fulling.

TUCKER, Josia, D.D., in Biography, a controversial writer, was the son of a small freeholder in Wales, and born in the year 1711. Having completed his education at St. John's college, Oxford, and taken orders, he served a curacy at Bristol, and was promoted by bishop Butler, who made him his chaplain, to the rectory of St. Stephen's in that city. His residence at Bristol drew his particular attention to commercial matters, in reference to which he published, about the year 1747, "A Brief Essay on the Advantages and Disadvantages which Respectively attend France and Great Britain with regard to Trade," which was followed by "Reflections on the Expediency of a Law for the Naturalization of foreign Protestants," published in two parts, 1751—2, and advocating liberal and enlarged prin-
ciples. In these principles he espoused the cause of the Jews in two "Letters to a Friend concerning Naturalizations," 1753. The part he took on this occasion exposed him to much obloquy, and was the occasion of his being burnt in effigy by the populace. However, in 1755 he obtained the degree of D.D., and was made a prebendary of Bristol. His activity in promoting the election of Mr. Nugent, afterwards lord Clare, as a representative for Bristol, was recom-
pensed in 1758 by the deanship of Gloucester. In the controversy occasioned by the petitioning clergy in 1771, he took a part, and published in 1772, "An Apology for the present Church of England, as by Law established," in which, whilst he opposed their claims, he expressed his wish for the omission of the Athanasian creed in the church ser-
cvice, and for excusing students of the universities upon ma-
triculation, and graduates in lay faculties, from subscription to the article. In the same year he published "Six Ser-
mons," on doctrinal points that were then much agitated. In 1773 appeared his Letters to Dr. Kippis's "Vindication of the Protestant Diffident Ministers with regard to their late Application to Parliament," which were written with moderation and candour, and in which he seems disposed to unite the claims of the church of England respecting its own members, with liberal concessions to those who differ from it. In 1774 he published his "Four Tracts, together with Two Sermons, on Political and Commercial Subjects," in which he unfolded his whole plan for settling the dispute with America, deemed by both the contending parties extrav-
gant; this was "to separate entirely from the North American colonies by declaring them to be a free and inde-
pendent people, over whom we lay no claim; and then by offering to guarantee this freedom and independence against all foreign invaders whatever." But he did not wish to con-
cede the point of right in this controversy, as appeared from his publication in 1775, entitled "The respective Pleas and Arguments of the Mother Country and of the Colonies diff-
tinctly set forth; and the Impossibility of a Compromise of Differences, or a natural Concession of Rights, plainly dem-
onstrated." Mr. Burke treated his scheme with some de-
gree of contempt, and therefore he addressed to him one of three subsequent publications on this subject. The dean became ardent and irritable in the prosecution of this dis-
pute, and allowed himself in the abuse of the colonists, and particularly of Dr. Franklin. In 1781, apparently devi-
ing from the principles which he had avowed in more early life, he attacked Mr. Locke and his followers on the origin, extent, and end of civil institutions, in his "Treatise con-
cerning Civil Government." The advocates of Locke re-
torted upon him with warmth, and perhaps with some de-
gree of ability; but "he might confide himself (as one of his biographers says) by having his work quoted by lord Mansfield in the house of peers, with a fine enologium on the talents of the author, whom he mentioned as a writer of the firft class for ingenuity and knowledge." Indulging his refentment against the Americans, and predicing con-
sequences likely to result from their independence, which have not been verified by fact, he addressed to M. Necker, in 1782, a pamphlet entitled "Cui Bono? or, An Enquiry, what Benefits can arise either to the English or the Americans, the French, Spaniards, or Dutch, from the greatf Victories or Successe in the prefent War." In the "Preface" to this work, he undertakes to refute the opinions of the advocates for equal representation. In his subsequent commercial publications he declares himself adverse to all restrictions upon trade, and decries of leaving it to regulate itself. Having resigned his rectory at Bristol to his curate, he re-
fixed at his deanship in Gloucester, and discharged the various duties of his office with exemplary alacrity. Although he was married, he left no issue. He lived to the advanced age of eighty-eight years, and died in 1799, by a paralytic stroke. Gent. Mag. Month Rev. Gen. Biog.

TUCKER, the Rev. William, one of the gentlemen of king Charles II.'s chapel, and precentor of Westminster Abbey, was a very judicious composer of choral music. Mr. Mafon, in speaking of the full anthem, "O give thanks unto the Lord," by this ingenious dilettante, very truly obser-
ves, that "every syllable in this composition has its just length, and each part of a sentence its proper pause; it ad-
mits no perplexing alterations or unmeaning repetitions, but proceeds in one ful, yet distinct strain, harmoniously, yet intelligibly." So many circumstances must concur in forming a com-
plete musician among the lovers of the art, who have no other view in its cultivation than pure amusement, that however ardent their zeal and sublime their genius, if they have not been early initiated in the mysteries of counterpoint, and purfed its labours with the perseverence of pro-
feffional students, timidity, embarrassment, ignorance, and confusion, will appear in their scores at the first glance of a regular-bred composer. In general, their practice, reading of scores, experience, and application, are inferior to thofe of the meanest organist, or ripieno performer: disdaining to perform under parts, or to study them in the works of great masters, as soon as they know their gamut, their chief practice consists in folos and amusing melodies; so that they remain to the end of their lives unable to count reeks, or keep
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keep time, with professional firmness and accuracy; and either totally neglecting or running away too soon from plain counterpoint to florid, a want of instruction and regular study appear in the bascs they put to the slightest and most natural melodies.

TUCKER'S ISLAND, in Geography, a small island in the Pacific ocean, so called by Capt. Wilfon of the Duff, from one of the crew who left the ship there. N. lat. 7° 22', E. long. 122° 5'.—Allo, a small island near the coast of South Carolina. N. lat. 32° 36'. W. long. 80° 16'.

TUCKERTON, a sea-port of New Jersey, in Little Egg Harbour.—Allo, a town of Burlington county, New Jersey; 201 miles from Washington.

TUCKET, a word used by Shakspeare in "All's well that ends well," act iii. sc. 8. corrupted from tuctata, Itals. a fourrith.

TUCKIN, in Agriculture, the name of the fatchel that is sometimes used in sowing beans in the field.

TUCKING-MILL, in Rural Economy, a name given in some places to a fulling-mill.

TUCKT HAZARA, in Geography, a town of Hindoostan, in Moultan; 10 miles N.W. of Tolumba.

TUCKUM, a town of the duchy of Courland; 33 miles E. of Oldingen.

TUCKUSH, a small island in the Mediterranean, near the coast of Algiers, opposite a town of the same name on the continent; 12 miles E. of the Cape of Iron.

TUCKWAPOUR, a town of Hindoostan, in Oude; 14 miles S. of Bahraich.

TUCKYPARA, a town of Bengal; 24 miles S. of Burdwan.

TUCOPIA, an island in the Pacific ocean, discovered by Quiros in 1606. He could not find any anchoring place, but was near enough to converse with the inhabitants, who offered him a present of nuts, and a piece of cloth made of palm-leaves; and they gave him plantations of fruit-trees.


TUCRI, a town of Naples, in the county of Molife; 13 miles E.S.E. of Molife.

TUCUBI, or Tucumbis, in Ancient Geography, a town of Spain, in Lusitania.

TUCUMAN, or Tacama, now called the Intendency of Salta, in Geography, a province of South America, in the vicerealty of Buenos Ayres, extending from 26° to 33° W. long., and from 22° 30' to 36° S. lat.; bounded on the N. by Chicas and Tarija, on the E. by Chaco and Yaptizlagia, on the S. by Cordova, and on the W. by the Andes, which separate it from Chili. This province is now divided into thiofe of Salta and Cordova. Elñallía says that the province of Tucuman was the largest in America, extending from the corner called La Guardia to the river of Quiaca, 380 leagues; of which 314 are fertile lands with carriage-roads, and the remaining 66 barren country with horse-paths. As far as Jujuy the temperature is benign, inclining to the warm and humid, and travellers find much convenience and abundance of provisions. The territory of Tucuman is rich and well cultivated, especially towards Chili, with some desert cantons upon the Magellanic fide. The soil is sandy, and almost without stones, but very well watered, producing plenty of cotton, wild cochineal, wax, honey, paltel for dyeing, and a variety of fruits, with roots, Indian wheat, &c. They likewise breed here vast numbers of cattle, and have plenty of deer, and other game, with lions and tigers in their woods. The sheep here are very large and strong, but their wool is fine, and the inhabitants use them also for carriage. The natives were formerly naked, but since somewhat civilized by the Spaniards, and covered with their woollen and cotton manu-

factures; they live in small villages very close to one another. Its two principal rivers are the Dolce and Saladó, i.e., the sweet and salt ones, besides innumerable smaller streams. In this province a kind of large crow is hunted, and an animal between a hare and rabbit. Here are said to be twelve kinds of bees, all producing honey of different qualities. The chief drink is called "Aloja," but Elñallía does not mention its ingredients, but it is the chica made of maize. Throughout the province there is, as he says, no perfon so poor that he does not kill a cow or a heifer every day for the support of his family.

In the jurisdiction of San Miguel de Tucuman (see St. Miguel) is found the tree called "Quebrachro," a name derived from its extreme hardwes, which breaks the axe; the outer part being white and the centre red, and the latter, after being steeped in water, becoming hard and heavy like stone. In the fame province are found spiders, which weave a thread of great strength and beauty. About a league to the south of San Miguel is the salt river called Sali. This town is remarkable for the manufacture of a kind of cars, used in transporting articles of commerce. The city of Salta (see Salta) is crowded with merchants in February and March, though in the rainy season the roads are fearfly passable: the surrouding vale of Lerma produces excellent wheat, and abundant patturne, but the poor are tormented with a kind of leprosy. The graziers, who deal in mules, and the merchants, chiefly Gallicians, are robust, and the women are remarkable for their beautiful complexion and flowing hair; yet the fex, after twenty-five years of age, is subject to a swelling in the throat, called "Coto," producing an effect very illogical and ridiculous, and which is carefully concealed with neckclothes, but attended with no disfigure or abbreviation of life. This deformity seems to belong to the goitre, a disorder formerly believed to be restricted to the mountains; but as Salta is situated in a valley, it is probably produced by the water or the fogs.

TUCUMANITA, a town of South America, in the province of Tucuman; 10 miles W. of St. Miguel de Tucuman.

TUCUYO. See Tucuyo.

TUCUYO, or Tucuyo, a river of Venezuela, which runs into the sea, N. lat. 10° 38'. W. long. 69° 22'.

TUDDER, a town of France, in the department of the Reoi; 11 miles S. of Ruremond.

TUDDETON. See Tuddington.

TUDELA, a town of South America, in the kingdom of New Granada.—Allo, a town of Spain, in the province of Leon; 5 miles E. of Valladolid.—Allo, a town of Spain, in Navarre, on the Ebro; taken from the Moors in 1118; 4 miles S. of Pamplona. N. lat. 42° 11'. W. long. 1° 40'.

TUDE, in Ancient Geography, a town of Italy, in Umbria, to the S.W., among the mountains. From being a small place it became a Roman colony.

TUDEGUA, in Geography, a town of Aftic Turkey, in Natoia; 32 miles N.N.E. of Edik-Shehr.

TUDES, in Ancient Geography, a town of Spain, on the route from Bracara to Alfurica, between Limia and Burbilla. Antón, Inn.

TUDWAY, Dr. Thomas, in Biography, an ecclesiastical composer, educated under Dr. Blow, at the same time as Turner and Purcell. He was one of the second set of children of the chapel-royal after the Reformation. Soon after quitting the chapel-royal, he was received into the choir at Windsor as a tenor singer. Tudway, like his fellow-disciples, endeavoured to distinguish himself early as a composer, and has entered into the Collection of Church Music which he transcribed for lord Harley, an anthem of his
his own composition, in 1675, when he was only nineteen, with fix more of his early productions for the church, of which the counterpoint is but ordinary and clumsy. The words are likewise often inaccurately accented: he throws the accent of the word triumph upon the second syllable, like Handel; which, though but slight, is, indeed, the only resemblance between them.

In 1681, at twenty-five years of age, he was admitted to the degree of bachelor of music at Cambridge. And in 1705, upon her majesty queen Anne visiting that university, he composed an anthem, "Thou, O God, hast heard my vows," which he performed as an exercize for a doctor's degree; and, after receiving that academical honour, he was appointed public professor of music in that university.

Dr. Tudway composed an anthem, "Is it true that God will dwell with men upon the earth?" on occasion of queen Anne going to St. George's chapel, at Windsor, for the first time; and for this, and other occasional compositions, was permitted to style himself organist and composer extraordinary to that princess.

In the latter part of his life Dr. Tudway resided much in London, and was patronized by the Oxford family. The valuable scores of English church music, in fix thick volumes quarto, which are now in the British Museum, No. 7357, were transcribed by himself at this time.

It is said that he used to meet Prior, sir James Thornhill, Christin the engraver, Bridgman the gardener, and other eminent artists, at lord Oxford's, once a week; and that sir James drew all their portraits with a pencil, among which is Tudway playing upon the harpsichord. Prior wrote sportive verses under these drawings, which were in the possession of Mr. Weft, the late president of the Royal Society.

Dr. Tudway's picture is in the music-school at Oxford: at Cambridge he was longer remembered as an inveterate punnister, than a great musician.

In the time of the duke of Somerfet's chancellorship at Cambridge, during the discontent of several members of that university at the rigour of his government and paucity of his patronage, Tudway, himfelf a malcontent, and joining in the clamour, said, "the chancellor rides us all, without a bit in our mouths!" Nor did the wicked fin of punning quit him even in sickness; for having been dangerously ill of a quinsey, and unable, for some time, to swallow either food or medicines; the phyfician who attended him, after long debates and difficulties, at length turning to Mrs. Tudway says, "Courage, madam! the doctor will get up May-hill yet, he has been able to swallow some nourishment?" the doctor cries out, "Don't mind him, my dear, one swallow makes no summer!"

In the Annals of Queen Anne's reign, 1706, vol. v. p. 333 the following relation of Tudway's disgrace at Cambridge is unaccountable, and mentioned no where that we know of but in these Annals by Boyer, printed in 1707: "About the latter end of July, the vice-chancellor of the university of Cambridge, having received information that Mr. Tudway had spoken words highly reflecting on her majesty, he convened the heads of houses at the regent's, where Mr. Tudway was cited to appear, which he did, and the words being positively proved upon oath, they all unanimously found him guilty, and proceeded to sentence, which was solemnly pronounced in the presence of the heads, and entered as an act by the public regifter, as follows: 'That Mr. Tudway be suspended of all degrees taken and to be taken; that he be deprived of his organist's place in St. Mary's church, and of his professorship of music in the university.'

"Mr. Tudway being of King's college, the provost deprived him of that place in the college, and the regifter there likewise entered his deprivation; and the butler and pantler took his name off the tables in their offices. The master of Pembroke-hall, where he was also organist, in like manner deprived him of that office, and the regifter there entered it accordingly, so that he was deprived of all he held in the university of Cambridge."

We thought it probable that this sudden paroxysm of disloyalty may have been brought on by the dismissal of his patron Mr. Harley; but that did not happen till a year after. In the account which Tudway gives of himself in his prefaces to the Collection of Choral Music which he made for lord Harley, he speaks with the greatest reverence of the queen, affumes the title of her majesty's composer extraordinary, and speaks of anthems which he composed expressly for her chapels-royal at St. James's and at Windfor. It was perhaps only for the sake of an irresistible pun which offered itself in conversation, that he twifled some sentence or expression into treason, or at least into disrepute; for he recovered all his places, had the degree of doctor in music conferred upon him when queen Anne visited Cambridge, and lived and died music-professor in that university.

TUEK, are cones of call-iron with an aperture to receive the nozzle of smiths' bellows, to prevent the heat of the fire injuring them.

TUECH, in Geography, a town of France, in the department of the Ardèche; 18 miles N.W. of Viviers.

TUEL, among Sportsmen, denotes the fundament of a horfe, or wild beast.

TUEL CAR, in Geography, a town of Hindoostan; 20 miles N.E. of Travancore.

TUEL COS, favages in the southern part of the American continent, or Terra del Fuego, refiding on the Rio Negro or Colachel, N. of the Moluches or Tehuelches. (See Patagonia.) The Tuelcos are a numerous tribe. They are divided into horfe and foot, and are dreaded by the Indians of the Pampas, who amount to five or six thoufand souls, with about one thoufand warriors; and they often join in attacks on the frontier. Their attachment to war is fuch, that in cafe there be no foreign enemy, one aduar or village of tents will make war againft another. Their lances are generally of ftrong wild reeds, and they are fo dangerous on horfback, that the Spanifh fucceflors cannot fometimes f tand the charge. The head is large and makes a terrible wound, by which, as they exprefs it, they may fee through their enemies. In these encounters the Spanifh cavalry prefer the fpear, fabre, and piftoles, the carabine and cartouch-box being of little avail. The bola or bow is of stone or metal, about the fize of thofe used in billiards; this is fixed to a string about a yard long, and at the extremity, by which it is held, there are fome feathers of the American offrich or caffowary. This string is turned round the head like a fling, and with it they can frike with certainty at a fufficient diftance. The bolas or bowels have been adopted by the Spanifh foldiers; being two globes of stone or hard wood flavened at the ends of a string, and ferving not only to enthrall the wild horfes and cattle, but alfo to annoy their enemyes. Poniards, sabres, and cutlaffes are more ufual among thefe favages than the bow or the fling. During war they are all cavalry; and they chufe for their general the moft robust and valiant of their chiefs. They paint their bodies, particularly the face and hands, with black and red, not onl y to inflire terror, but to serve as a mark, that they may not be fingly out by the enemy. The tents or houfes of all the tribes of favages are fimilar, being compofed of hides of horfes, beeves, or other animals, and arranged in streets.
The tent of the cazique is distinguished by painting and superior arrangement. The common food is the offrich and castawary, and a kind of armadillo; but their chief regale is the flesh of the snare or foal. In cafe of urgent thirst, they will drink warm blood, which they draw from their horses. The want of food is supplied with bones, greafe, and dry dung. The use of clay is universal, in making various forts of earthenware. They eat with their meat rosted or boiled, and are no strangers to some preparations of milk. The Serranos or mountaineers make a paste of corn, of which they form their bread in loaves, called pateis. In Tuculca, and in other southern parts, the guanoaco abounds, the fleuth of which, with that of a kind of hare, forms the chief food of the Tehuels or Patagonians. But the fleuth is eaten half raw. The drefs of both sexes is a mantle, extending to the mid-leg, with an opening for the arms, and gilt with a leathern belt. On horfaeeback, the skirts are drawn together so as to form loose breeches. These clothes are sometimes made of wool, but they prefer the skins of the guanoaco, lion, and tiger; and the Patagonians use those of seals. With the feathers of the offrich they make fans, and ornaments for bridles, flaining them of various colours. These articles they exchange for tobacco, brandy, and the tea of Paraguay, which with them are articles of luxury. Hard-ware and also coarse woollen are much esteemed. The brandy they exhaust at once, making no reserve. The herb of Paraguay, after having served once, is dried, again used, and finally eaten. The tobacco is smoked in a wooden pipe. The caziques or captains have several wives, but monogamy generally prevails. Jealousy is little known, and a payment in kind is the usual penalty for adultery. Homicides and duels are frequent, and these latter open conflicts are deemed honourable; but treason and assassination are capital crimes, and the guilty are put to death with lances or wooden clubs, nor are there any churches to protect murderers. Although all are thieves, they will make war on a tribe that protects robbers. In every tented village, there is a priest revered as a forcerer and physician. In the night they have no light but that of fire, which they procure by friction of hard wood. Their conflicts are so violent, that few are seen without marks of deep wounds. The desire of revenge passes from one generation to another. They celebrate their victories with dancing, singing and drinking; painting and adorning themselves for such occasions. Their number has been greatly reduced by the small-pox. They appear to have no religion; but contemplate with reverence the sun, which they call "Antu," and the moon "Quien." The only ceremony that has any aspect of religion is, when they kill a beeve, their sprinkling some of the blood on the ground, with the formulay, "Give me to eat, me, and my people." They think that the moon confers strength and valour; and when the new moon appears, they present their infants, and say "make them strong." They also pray to Quien for courage and strength to avenge injuries, and destroy their enemies. Inefficient attempts have been made by popish missionaries for their conversion. The missionaries were slain and the few Christians dillered. Such is Eftalla's account of these savages.

**TUELLA, La.** A town of France, in the department of the Dora; 16 miles W. of Aosta.

**TVER,** a town of Russia, and capital of a government, at the conflux of the Tvertza and Volga. It is the see of an archbishop, and, according to Buflching, contains seventy churches and convents. Tver, from a small fortress, became a town, and increased in population and wealth to fo great a degree, as to become the metropolis of an independ-
matter in solution, or mechanically suspended. Tufa is also
formed by the concretion of loose volcanic dust or cinders
cemented by water; and also by the consolidation of mud
thrown out of volcanoes. The disintegration and subse-
cquent concretion of basaltic rocks forms a third kind of
tufa, which the German geologists call trope-tufa.

calcareous tufa is formed in large quantities in many
lime-stone districts. The waters which issue from calcareous
rocks rise to the surface impregnated with a considerable
quantity of carbonate of lime. On exposure to the air and
light, they deposit their contents on whatever substance is
presented to them, and in the beds of rivulets form solid
incrustations, sometimes of great extent, and many yards in
thickness. The stone thus deposited is always more or
less porous or vesicular, and contains portions of plants and
fresh-water shells which it has enveloped. This stone
hardens by exposure to the air, and is frequently employed
in architecture. It is not a little remarkable, that St.
Peter's church, and some of the grandest works of ancient
and modern architecture at Rome, are formed of a species of
calcareous tufa, called by the Italians travertino. In
the vicinity of Stroudwater, in Gloucestershire, many of
the springs that issue from the feet of the Cotswold hills make
large depostions of calcareous tufa. At one situation, called
the Rock-mill, a bed of this stone, more than thirty feet in
thickness, has been worked formerly for building, as ap-
ppears from some of the oldest edifices in the neighbourhood,
which proves the hardnefs and durability of this stone.
In Derbyshire, and all the calcareous districts in England, beds
of tufa are formed by similar depofitions. Beds of tufa
are very common among the mountains which terminate the
high valleys of the Alps, and there arc promontories of
calcareous tufa in the valleys of Switzerland. It was generally
supposed that the particles of lime-stone were held in solution
by carbonic acid in the water, and that the evaporation of
this acid, after exposure to the air, occasioned the depofition
of the calcareous particles. Dr. Kidd, of Oxford, has
made some experiments on the solvent power of simple
water on carbonate of lime, which he finds to be much
greater than was generally suppos'd. If, says he, half an
ounce of distilled water be agitated for a short time in con-
tact with pulverized carbonate of lime, it will be found, on
the addition of oxalate of ammonia, that the water will be
rendered turbid. It appears, therefore, that when a spring,
charged with as much calcareous matter as it is capable of
holding in solution, has issued from beneath the earth, the
requisite quantity has been diminished by evaporation, the
particles of calcareous matter are liberated and depofited.
Calcareous tufa forms so rapidly in some situations, as
to entirely close up the passage in canals and aqueducts
through which calcareous waters flow. Many hot springs
deposit tufa in abundance; the heat appears to afford the
solvent power of water, and to accelerate the precipitation of
its contents by a more rapid evaporation from the surface.
The travertine, or travertino, is the moft remarkable of all
the calcareous tufas, as it has been employed for the con-
struction of some of the proudest monuments of architectural
genius in ancient and modern times. Of this stone,
Brickla, an Italian mineralogift, gives the following in-
teresting description.
"The Anio, or Tiverone, which descends from the Apen-
nines of Viècovaro and Subiaco to the east of Rome, crofes
Tivoli before reaching the plain where it unites with the
Tiber. All the land through which the Anio paffes in
Tivoli, whether near the great caftaie or the fmalier ones, is
palfed with mafsies of a calcareous ftone, produced by the de-
position of its waters. Sometimes a piece of rush or reed, or
other vegetable matter, is the firft point to which the calca-
reous earth begins to attach itself. It generally depofes in
concentric layers, and has the hardness and fibrous tiffue of
alabaff. These layers are neverthelefs separated by a
bed of calcareous earth, friable, yellowish, and very fine.
At the foot of the mountain of Tivoli, where the Anio
enters the plain which extends to Rome, are the quarries of
travertine. This calcareous rock is depofed in horizontal
beds: its colour is yellowish-white, its grain earthy, frac-
ture uneven, and its hardness far furpasfes that of thofe cal-
careous mafles produced by the Anio in the neighbourhood
of Tivoli. Cavities, where the calcareous fubfance has
assumed a fparry grain and falaftitic form, are common in
travertine. Sometimes thefe cavities have been finel fince
felled by a calcareous falaftite, whiter, of a finer grain, and harder.
This is the origin of thofe white spots, the regularity of
which has caufed them to be miftaken for marine bodies en-
veloped in its pale. Travertine contains no remains of
marine fubfiances, but fometimes it affords fragments of
vegetables. It is not doubted but travertine owes its
origin to the depofitions of the Anio; depofitions which in
the plain may have formed a more solid and compact rock:
because its current was fefs rapid, and perhaps its waters
more flaguant in feveral places. Not far from the quarry
of travertine is the Solfatara, foon called on account of the
great heat of its waters, which abound in sulphuric hy-
drogen gas, and form a confiderable fediment of calcareous
matter. A cardinal d'Elle caufed the canal to be dug
which conveys the waters of the lake to the Anio. The
calcareous depofitions are there fo abundant, that if every
three years it was not cleaned out, it would be closed up,
notwithstanding its depth and breadth. The water which
runs in the canal, on meeting with the bits of ruflh or other
bodies, covers them with a white calcareous crust, two or
three lines in thicknefs. These incrustations are known by
the name of comfits of Tivoli. Before this paffage was
opened, the overflows to which the lake is subject were
often fo confiderable, that the water fpread over the neigh-
bouring grounds, and formed on their surface a fowy
crust. The waters of the lake fo charged with calcareous
earth, uniting with thofe of the Anio in the floods which
their union muft produce, have themfelves contributed to
the formation of travertine. I do not think that the Anio
alone would have been capable of forming the quantity
which is found in that rock.

"Independent of the immense quarries worked by the
ancients, there are besides others of fuch vast extent, that
they may fupply the demands of many ages. The lake of
Solfatara seems to have greatly afhifted in the formation
of this rock. Its water being charged with gaz, explains the
great number of hollows which travertine prefents. It
proves, that when the rock harden'd, a gaz has at the fame
time escaped in feveral places, which has prevented the ap-
proximation of its parts, which were still fott. As often
as the interior of a mass of rocks prefents cavities without
any indication of foreign fubfiances which might have op-
pofed the union of its parts, I conceive their origin may be
attributed to the ecape of gaz at the moment when the
fubstance was paffing from a state of fottnefs to folidity, by
cooling or drying. From what I have juft fhewn, it follows
that the travertine or rock of Tiber or of Tivoli is a carbonate
of lime, formed by the depofitions of the Anio and the Solfa-
tara of Tivoli. The Roman artists give the name of traver-
tine only to the stone taken from the quarry situated at the
foot of the mountain of Tivoli. The lithologists, less faves
TUFAN, in Geography. See SIFAN.
TUFARA, a town of Naples, in the province of Capitanata; 5 miles W. of Volturara.
TUFECI, a body of the iphsis, or horse, in the service of the grand vizier.
TUFFE, in Geography, a town of France, in the department of the Sarte; 7 miles S.W. of La Ferté Bernard.
TUFFEN, a town of Switzerland, in the canton of Zurich; 13 miles N. of Zurich.
TUFFENBACH, a town of the duchy of Stiria; 9 miles S. of Judenburg.
TUFFO, in Botany, a name given by the people of Guinea to a plant common in that country, and used in decoction to wash fore eyes with. It is of the fun-flowers kind, and is called by Petiver, flōs Guineensis folto sæbrem flore minore. It much resembles some of the American sun-flowers. Phil. Trans. N. 232.
TUFFOA, in Geography, a town on Africa, on the Slave Coast; 40 miles W. of Affom.
TUFFPOONS, in Meteorology. See TONQUIN.
TUFT, in Botany and Vegetable Physiology, technically implies a head of flowers, capitulum, of which each individual is not sepal, but elevated on either a simple or subdivided partial flalk, though all together composing a dense roundish mass. Perhaps tufa would be better retained in English as synonymous to fasciculus, in which sense it is often practised to use, for any small number of flowers, on short aggregate or subdivided flarks, springing from the bosoms of leaves, or the divisions of a panicle or corymb. In like manner this term is applied, with more laxity, to little bundles of leaves, hairs, &c. on different occasions.
TUFTED DUCK, in Ornithology. See Tufted DUCK, or Fuligula under DUCK.
TUFTED VETCH, in Agriculture, a term commonly applied to a perennial fort of this plant, which is highly delving of cultivation by the farmer, for either meadow or pasturage land. It is frequently found mixed with other grasses, in rather moist ground. See VETCH, and VICIA Graeca.
TUFTONBOROUGH, in Geography, a town of New Hampshire, on the north side of Winnipigooke lake; 32 miles N. of Concord.
TUG, BAVIN, in Agriculture, a sort of carriage used in some districts for loading bavins or faggots, and sometimes other kinds of field produce. It is so made as to be capable of carrying a hundred and fifty faggots, each four feet in length, and three feet in girth, without being over top-heavy, so as to be liable to turn over in bad roads. It is much used in the weald of Kent, and some other counties.
TUGGLOO, in Geography, a town of the state of Georgia; 95 miles N.W. of Augusta. N. lat. 34° 30'. W. long. 83° 21'.—Alfo, a river of the state of Georgia, one of the branches of the river Savannah, which joins the Keowee; 28 miles N.W. of Peterburg.
TUGGA, a town of Tunis; 20 miles S.W. of Cairoan.
TUGGALA, or TEGEA, a town of Africa, in Kordofan; 150 miles S.W. of Sennar.
TUGGEN, a town of Switzerland, in the canton of Glarus; 5 miles S.W. of Utznach.
TUGGURT, a town of Africa, in the kingdom of Tunis; 60 miles S.W. of Tunis.—Alfo, a town of Africa, in Nigritia, capital of a district called Wadreg; 360 miles N.E. of Tumbudoo. N. lat. 20° 30'. E. long. 6°.
TUGOURT, or TOGOURT, a town of Algiers. It was formerly under the protection of the Turks, and paid a trifling acknowledgment. The inhabitants being disguised with the conduct of their masters, revolted; but were reduced to obedience, the town taken, and great numbers of them put to the sword; 240 miles S.S.E. of Algiers. N. lat. 32° 40'. E. long. 5° 50'.

TUGIA, in Ancient Geography, a town of Spain, upon the route from Caftulo to Malaca, between Caftulo and Truxinam. Anton. Itin.

TUGMA, a town of India, on the other side of the Ganges and near it, with the title of Metropolis, according to Ptolemy.

TUGPINS, in Artillery, are the iron pins which pafs through the fore-ends of the shafts of the army carts, to fallen the draughts chains for the fore-horses.

TUGUESA, in Geography, a town of South America, in the province of Darien; 20 miles N.E. of St. Maria.

TUGULIAN, a town of Ruffia, near the flrains which separate the continent of Asia from America. N. lat. 65° 54'. E. long. 189° 14'.

TUGUS, in Botany, the name of a sweet aromatic plant, growing up sometimes to eight or nine cubits, much esteemed in the eastern parts of the world, and supposes by father Camelli, who very strictly compared it with the accounts given by Dioscorides and the ancients of their amomum, to be that very plant. The clutered manner of growing of the fruit, together with its oblong shape, and the aromatic taste of the seeds, feed greatly to countenance this opinion.

Each fruit of the tugus contains five or seven seeds; these are of an oblong figure, of a reddith colour, and of an agreeable aromatic taste, but not too acid. They are much fought after by birds, insects, and field-mice.

The natives feed as fond of these as the ancients were of the amomum; and the young women firing them on threads, and wear them as bracelets; sometimes they make the bracelets of the seeds alone; but more usually they firing them alternately with pearls, and pieces of red coral: these bracelets they call carapi, as well as the fruit itself.

They are supposied, when worn by way of necklace, to keep off the effects of a bad air, and to preserve them from the bites of serpents, or the centipes. If not a preservative, they are, however, found, upon experience, to be a very good remedy in the last cafe, the common application for the bite of this animal being some of the seeds of the tugus chewed in the mouth to a fort of paste.

The clutered fruit of the tugus, or true amomum, when newly formed and unripe, somewhat resembles the pseudo-amomum of Garcius; but this likewise wears off as they ripen. For Camelli's accurate description of this plant, illustrated by a figure, see Phil. Trans. No 248. p. 2.

TUGUZAK, in Geography, a river of Ruffia, which runs into the Uvelka, 12 miles E. of Troitz, in the government of Upha.

TUGWELL PLOUGH, in Agriculture, a light, easy-going, well-contrived implement of this kind, invented by a perfon of that name. It performs the work well, but not deeply, consequently is improper for weeding lands. It is sometime termed the Gloucester plough. See Plough.

TUHERE', in Geography, a town of Brazil; 45 miles E. of Paru.

TUHLOIS, a town of Sweden, in Tavalland; 15 miles N.E. of Tavalthus.
TUL

nem gentis conditionerque." Caesar thought that Pluto was
honoured under this appellation. Accordingly he says
(De Bell. Gall. l. 6.) "the Druids report that the Gauls
are come from Dis or Pluto, who after his death was
worshipped by both nations as their father and founder,
by the Gauls under the name of Pluto, and by the Germans under
that of Tuilhon, and both of them erected statues to him in
the woods."

Some have ascribed the origin of the name Tuesday to this
day. See WEEK.

TUTIRICA, in Ornithology, the name of a Brazilian
parroquet, which is a little larger than the common kind;
all over of a fine beautiful green, but deeper on the back
and wings than elsewhere; its beak is very hooked, and of
a pale red; its eyes black, and its feet blue; its tail is but
a little longer than the wings when closed. This is a spe-
cies much esteemed in the Brazil, as it easily learns to talk,
and becomes so tame as to eat out of any one’s mouth. See
Psittacus Tiriæ.

TUK, in Geography, a town of Charâfim; 18 miles N.
of Ursæneg.—Afto, a town of Egypt, on the left bank
of the Nile; 6 miles N. of Nékkadé.

Tuk el Efferâl, a town of Egypt; 5 miles N. of
Girge.

TUKERA, a town of Hindostan, in Oude; 14 miles
N. of Lucknow.

TUKKIKARI, a town on the east side of the gulf
of Bothnia. N. lat. 65° 26’. E. long. 25° 12’.

TUULIKAZAK, an island in the North sea, near the
coast of East Greenland. N. lat. 61°. W. long. 46° 20’.

TUUKO, a town of Abyssinia; 20 miles W. of
Tectarin.

TUKURN, a town of the duchy of Courland; 32
miles E.S.E. of Goldingen.

TUL, a town of Grand Bucharia; 36 miles S.E. of
Anderab.

TULA, a city of Russia, and capital of a government,
on the Upha. According to Balhching, it contains 144
churches and convents. Near it are some iron mines, and
in the city are manufactures of fire-arms, all sorts of cutlery
and other works in polished steel, and leather. The number
of merchants, including shop-keepers, is estimated at 40,000,
few of whom are very rich. The number of inhabitants
is estimated at 50,000; the population is increasing, and be-
fides wooden buildings here are many of stone; 112 miles
S. of Moscow. N. lat. 53° 45’. E. long. 37° 39’.

Alfo, a town of Mexico Proper; 40 miles N. of Mexico.

Alfo, a river of Mexico, which runs into lake Chapala,
near Zamora.

TULACUM, in Natural History, a name given by the
people of the East Indies to a species of the yellow orpi-
ment, of the courer kind, variegated with red. They
prepare this by several calculations, and then give it inter-
ally in fevers, and many other disorders, effecting it a
fort of panacea. They say that gold may be extracted
from it, which is not improbable; for it is well known,
that some of the Roman emperors did actually procure
gold from one of the other kinds of orpiment, which is
now found at Goffslæer in Saxony.

TULAH, in Geography, a town of Hindostan, in
Bengal; 31 miles E. of Dacca.

TULBGIA, in Botany, so named by Linnaeus in
honour of the Dutch governor Tulbagh, long resident at
the Cape of Good Hope, who sent numerous plants from
that country to professor Burmann, and furnished Linnaeus
with several of its insects, particularly a fine species of
Papilio, which is called Tulbaghia, being one of the tribe of

Lamarck Uhufr. t. 243. Gartn. t. 16.—Clais and order,
Hexandra Moumington. Nat. Ord. Spathacæ, Linn. Narciffi,
Juss.

Gen. Ch. corrected from the Linnean MSS. Cal.
Sheath of two oblong membranous valves, containing many
stalked flowers. Cor. of one petal, inferior, falver-shaped;
tube cylindrical; limb in six equal, lanceolate, acute,
spreading segments, shorter than the tube. Nectary of three,
distinct or combined, cloven, acute, equal, fleshy leaves,
crowning the tube. Stam. Filaments fix, very short, three
in the throat of the tube, three lower down; anthers heart-
shaped, acute. Pfl. German superior, ovate: foldy cylin-
derical, much shorter than the tube; stigma turbinated,
decrepited. Peric. Capsule oval, with three angles, three
intermediate furrows, three cells, and three emarginate
valves. Seeds few, oblong, obtuse, triangular, compressed,
corrugated.

Eff. Ch. Corolla falver-shaped; limb in six equal seg-
ments. Nectary of three cloven scales, crowning the tube.
Stamens three in the throat, three within the tube. Cap-
fluence superior, of three cells and three valves. Seeds
compressed.

Mag. t. 806. (T. capenis; Linn. Mant. 2. 223. Jacq.
Hort. Vind. v. 2. 52. t. 115.)—Flowers drooping. Ne-
catory of one leaf, in six segments, as long as the limb of
the corolla. Native of low sandy spots, near the town,
at the Cape of Good Hope, flowering about July, and called by
the Dutch colonists Wilde Knoplook, or Wild Garlick. It is
said to be used for disorders of the breast, flowed in nulks;
but whether internally or externally, is not recorded. This
species was sent to Kew by Mr. Maffon, in 1774. Jacquin
had it a few years earlier. Root tuberous, with numerous
fleshy fibres. Leaves radical, erect, numerous, two-ranked,
linear, blintth, channelled; exuding at the base. Stalk
solitary, about a foot and a half or two feet high, roundish,
simple, bearing a hoof umbel of from ten to fifteen spread-
ning or drooping flowers, whose partial flasks are near an
inch and a half long. Each flower is rather thinner than a
Harebell, oppresively sweet in an evening. Corolla green
or slightly glaucous. Nectary purplish-brown. Seeds black.
The whole plant, when ever to slightly bruised, exhales a
rank smell of garlic, still perceptible in the old dried
specimens of the Linnean herbarium, whenever they are
touched or moved.

2. T. cepaææ. Purple Tulpagia. Linn. Suppl. 194,
excluding the synonyms. Willd. n. 2. Ait. n. 2. Thunb.
Prodr. 60.—Flowers erect. Nectary of three distinct
cloven leaves, half as long as the limb of the corolla.
Native of the Cape of Good Hope, from whence it was
sent by Mr. Maffon to Kew garden in 1795. A smaller
plant than the foregoing, with much narrower leaves.
Umbel, in our only specimen, of seven flowers, whose
coarolla is purple, or crimolin. Of the colour of the ne-
cary we cannot judge, but its length is about half that of
the segments of the petal.

There can scarcely be a greater example of confusion
than the history of these two plants in the Supplementum
of Linneus, nor could it be unravelled without the original
specimens. If in the character and description of the first,
we read folia subefusiformis, instead of fusiformis, it may
be intelligible. The root moreover, in one specimen, seems
bulbous. All the rest answers tolerably well. In the
second
second species, the leaves are perfectly linear; the root by no means fasciculate, except its fibres, being exactly like the former; to which the fynonyms, even of Liananus himself, undoubtedly belong. A figure of T. capitata is much wanted. The plant is laid to flower at Kew in April.

3. T. hypoxidea. Short-crowned Green Tulbagia.—

Flowers drooping. Nectary very short and obtuse. Segments of the limb of the corolla taper-pointed.—This hitherto nondescript species flowered in March 1792, in the border of Meffrs. Lee and Kennedy, of Hamner smith, who received the root from Holland. There can be little doubt of its having been brought to that country from the Cape of Good Hope. The leaves are linear and very narrow, about one-fourth the breadth of T. alliacea. The inflorescence, as well as the peltate and general aspect of the flowers, most resemb that species. The corolla is green, but its segments more taper-pointed, and full as long as the tube; while the nectary is extremely short and blunt, rising but little above the mouth of the tube, and confining, if we mistake not, of three undivided lobes.—Mr. Sowerby made a drawing of this species at the period above-mentioned, which, though now meiliad, may one day probably be given to the public.

Tulbagia, in Gardening, contains plants of the tender, herbaceous, exotic kind, among which the species cultivated are, the alliaceus or garlic tulbagia (T. alliacea); and the cepaccus or onion tulbagia (T. cepaccus).

Method of Culture.—In each of these sorts, the young plants may be increased by fowing the seeds, flippin the branches, and offsets from the roots.

The seeds should be sown while fresh in pots filled with light mould, and be plunged into a tan hot-bed any time in the autumn or spring feasons, when they will soon begin to grow. And the slips and offsets may be planted and managed in the same way. The young plants in all the cafes muft conilantly remain in the fove, and have water occasionally given them.

Both these plants afford an agreeable diversity in fove collections.

TULBING, in Geography, a town of Audfria; 4 miles S.S.E. of Tuln.

TULCA, a town of European Turkey, in Bulgaria, on the south side of the Danube, opposite Ilmait. In the year 1771, this town was taken by the Russians, and again in 1790.

TULCZIN, a town of Russian Poland; 12 miles S.W. of Braclaw.

TULEBRAS, a town of Spain, in Navarre, on the Queios; 7 miles from Tudela.

TULIAN, a town of South America, in the province of Cordova; 110 miles N.W. of Cordova.


Gen. Ch. Cal. none. Cor. bell-shaped, inferior, of six ovate-oblong, concave, erect, deciduous petals. Stam. Filaments fix, awl-shaped, much shorter than the corolla, taper-pointed; anthers oblong, quadrangular, erect, very fatile, ditant. Pifl. Germen superior, large, oblong, bluntly triangular; style none; stigma with three prominent angles, or three divided lobes, permanent. Petal. Capule triangular, somewhat elliptical, of three cells, and three ovate valves fringed towards the edges. Seeds very numerous, flat, semicircular, lying horizontally over each other, in a double row, with scales of the same shape (or barren seeds) between.


1. T. fylusfris. Wild Yellow Tulip. Linn. Sp. Pl. 438. Willk. n. 1. Fl. Brit. n. 1. Engl. Bot. t. 63. Fl. Dan. t. 375. Curt. Mag. t. 1202. Redout. Liliac. t. 165. (T. bononifinis; Ger. Ern. 138.)—Flower solitary, somewhat drooping. Leaves lanceolate. Stigma triangular, abrupt, slightly three-eflet. Stamens hairy at the base. Petals acute, hairy at the tip.—Native of Sweden, England, Bohemia, Germany, Switzerland, and France, flowering in April. Root an ovate bulb, flatish at one fide, prominent at the other. Stem quite simple, erect, round, smooth, twelve or eighteen inches high; leafy in the middle; tapering at the base. Leaves about three, alternate, lanceolate, acute, keeled, entire, smooth, somewhat glaucous; the uppermost linear and much the narrowest. Flower drooping, till it is fully expanded, of a fine golden yellow, sweet-scented; the three outermost petals greenish at the back; all of them elliptical, acute at each end, and tipped with a little white wool at the summit; three innermost fringed with similar wool at the base. Stamens yellow; their filaments densefily woolly at the bottom; anthers linear-oblong, Gerden pale yellow or greenish, crowned with a triangular, abrupt, not dilated stigma, gradually splitting into three small notches, slightly downy at the top. The Early Yellow Tulip of the gardens, which is figured in the plates of Redouté and Curt. Mag. cited above, can hardly be distinguished from our wild kind, except being larger, with a rather more decidedly three-lobed woolly stigma. Our Bohemian wild specimencs are intermediate between the two.

2. T. Celfana. Small Yellow Tulip. Redout. Liliac. t. 38. Ait. Epit. 375. Curt. Mag. t. 717, erroneously named there Melanathum uniforum. (T. biflora; Donn. Cant. ed. 5. 75? T. pericca minima; Rubb. Elyl. v. 2. 112 f. 8.)—Flower mostly solitary, erect. Leaves lanceolate. Stigma triangular, with three short, rounded, downy lobes. Stamens slightly hairy above their base. Petals smooth at the tip.—Native of the south of Europe, and of the banks of the Wolga. We have known this species for above twenty-five years in Chelsea garden, where it was cultivated by the late Mr. Fairbairn, in pots, amongst alpine plants, protected by a frame in winter, and flowered about May. So little was it understood, that the able writer on this tribe of plants in Curtis's Magazine originally misfliok this Tulip for Melanathum uniforum; an error corrected at t. 1135 of the same work. It is very nearly allied to the fylusfris, but not half so large, and the flower is tinged with red externally. The three innermost petals are slightly fringed at the lower part, but all fix are quite smooth at the extremity. The stamens are smooth at the base, though they bear a tuft of hairs a little way above it. Anthers shorter, and more elliptical, than in T. fylusfris. Stigma more decidedly three-lobed, rounded, and downy. Capule elliptical. Very rarely there are two flowers on a stem. They have no scent. Each petal has sometimes, not always, a green keel.

3. T.
TULIP.

3. T. biflora. Two-flowered Yellow Tulip. Pallas It. v. 3. 727. t. D. f. 3. Linn. Suppl. 136. Willd. n. 4.—Stem two or three-flowered, with two spreading lanceolate leaves. Stigma triangular, abrupt, downy, fearfully notched. Petals widely spreading, hairy, like the stamens, above their base; smooth at the tip. Native of desert deserts about the river Wolga, in a stiff clay soil, along with the, but flowering a few days earlier, and of much shorter duration. This is fearfully half the size of T. Celsiana, of which a two-flowered spémen has sometimes been taken for it. The more simple stigma, more elliptical and expanded petals, green at the back, and more oblong authors, are abundantly different from that species. From the *flevirif* the present is still more unlike, as to size, smoothness of the tips of its petals, and their flat spreading position, to say nothing of an orange spot at their base. The *flevirif* too is said by Pallas to be more glaucous and succulent. The flowers vary rarely to one or three, and are fragrant.

4. T. Sibthorpiana. Yellow Greek Tulip. Sm. Prodr. Fl. Græc. Sibith. v. 1. 229. Fl. Græc. t. 330. unpubl.—Stem single-flowered, smooth. Flower drooping. Petals obtuse. Stigma club-shaped. Filaments hairy all over.—First observed by the late professor Sibthorp, near the ancient Cretea, now Porto Cavaliere, in Asia Minor; and afterwards, as Mr. Hawkins informs us, on a small rocky eminence near Naouarin, in the Peloponnesus. The root is a white, roundish, downy bulb, scarcely an inch in diameter, surrounded by numerous lateral offsets. Stem a span high, bearing two alternate erect smooth leaves, of which the lowest is largest and most ovate. Flower entirely yellow, pendulous, an inch long. Petals apparently smooth in every part. Stemena whitish as well as the perianth. Anthers linear, beaked, nearly as long as the filaments, which are clothed from top to bottom with short dense prominent hairs. Germin short, obtutely triangular, smooth. Stigma twice or thrice the length of the germin, triangular-club-shaped, obtuse, slightly three-lobed, almost as hairy in every part as the filaments. This is a very different species.

5. T. Clyftana. Red and White Italian Tulip. Redout. Liliait. t. 37. Ait. Epit. 375. Curt. Mag. t. 1390. Sm. Prodr. Fl. Græc. Sibith. v. 1. 229. Fl. Græc. t. 329. unpubl. (T. pericosa proco; Cluf. Cur. Polt. 9, with a figure. T. pericosa, flore rubro, oris albidis, elegans; Ger. Em. 142. T. pericosa; Park. Parad. 52. t. 53. f. 6. T. variegata pericosa; Redout. Elyf. v. 2. 111. f. 7.)—Stem single-flowered, smooth. Flower erect. Petals acute, smooth. Leaves linear-lanceolate.—Native of Italy, Sicily, and Persia, flowering in March. About the size of *T. fylvestris*, but the stem bears four or five leaves, gradually smaller and narrower upwards, most glaucous beneath, smooth, somewhat undulated, at least the lower one; all taper-pointed. The three inner petals are white on both sides, sometimes blunted; three outer rather larger, acute, white or blushed-coloured within, crimson at the back, with white edges, and a green tip; all of them marked at the base internally with a dark-violet spot, and all quite smooth in every part, as are the violet-coloured filaments, and green perianth. The stigmas consists of three rounded, compressed lobes, each marked with a downy furrow, like the Garden Tulip hereafter described.


Commonly cultivated in Holland, by the name of *Due Van Thol*, from whence the heft roots are brought to us. They flower in the open ground in March or April, but in a room, whether in water, sand, or earth, about January. The whole plant is of a dwarf stature, and glaucous hue. Flower broad-bell-shaped, sweet-scented. Petals: scarlet, edged with yellow, more or less acute. Stigma like the bell, but rather larger.

7. T. Oculo folis. Agen Tulip. "St. Amans Rec. Soc. d’Agr. d’Agen, v. 1. 75." Redout. Liliait. t. 219. Ker in Edw. Bot. Regist. t. 204. (T. boloniensis, fives bombsycia, flore rubro, major; Park. Parad. 51. t. 52. f. 1.)—Stem single-flowered, smooth, as well as the petals and filaments. Flower erect. Leaves ovato-lanceolate, finely fringed.—Found about Agen, in France, and several places in the southern part of that kingdom, flowering in April, and lately imported into England, by Messrs. Whiteley and Co. of Fulham. This differs from the last in the particulars contained in our specific character, and more nearly approaches the following. The coat of the bulb is said to be internally woolly. Leaves broad, slightly glaucous. Flower large, bell-shaped, of a fine scarlet red, each petal marked with a broad, a black, yellow-eroded spot at its base. Stigma like the following.

8. T. Gefneriana. Common Garden Tulip. Linn. Sp. Pl. 438. Willd. n. 3. Ait. n. 3. Curt. Mag. t. 1135. "Sowerb. Fl. Luxur. t. 5. 6. 11. 117." (Tulipa; Redout. Elyf. v. 2. 102—108.)—Stem single-flowered, smooth, as well as the petals and filaments. Flower erect. Leaves ovato-lanceolate, glaucous, smooth. Lobes of the stigma decurrent, deeply divided.—Native of the country bordering on mount Caucasus, where it flowers in April, and from whence Dr. Fisher has sent us a wild specimen. Conrad Gfener reports, that it was brought from Cappadocia into the European gardens, in 1559. Nothing is now more common or more famous, particularly the many varieties in form and colour, which florists, especially in Holland, have so much cultivated, and in some cases so highly prized. The old botanical writers, in their wooden cuts, represent many of these, and almost all the supposed species in Bawinn’s *Pinax*, are really, as Linnæus indicates, mere varieties. In a wild state, the petals are crimson, yellowish at the base, about an inch and a half long; by cultivation they increase in size, become streaked in colour, and sometimes assume a jagged and spurred appearance, with every variety of scarlet, yellow, purple, and even green, in their colouring. This we first called the Parrot Tulip, a name now generally adopted. It is Rudbeck’s *T. flore luteo rubro variegato, petalis lanestatis*, Camp. Elyf. v. 2. 108. A plain yellow tulip, the blunt points of whose petals are somewhat recurved, and whose whole flower is of a handsome ovate figure, seems to us possibly a distinct species; but this must be decided by cultivation from seed.

TULIPA, in Gardening, furnishes plants of the bulbose rooted, flowery, perennial kind, among which the species cultivated are the Gesner, Turkey, Cappadocia or common garden tulip (T. Gesneriana); and the wild or yellow tulip (T. fylvestris).

The flower is distinguished from the other fort, according to Martyn, by its pubescent sepal, spreading sweet-smelling corolla, the carlinets of its flowering, and the smallness of its faze.

And in respect to the varieties, the editor of Miller’s Dictionary observes, that the old authors divided tulips into *procoes* or early-blowers, and *feronia* or late-blowers, with an intermediate division of *dubia medius*, doubtful or middle blowers, which flowered between the two others, and for the
the most part rather belonged to the late-blowers. Modern florists, he affirms, have almost neglected the early-blowers. The first sort, according to him, are not near so fair, nor do they rise half so high as the late ones; they are chiefly valued for appearing early in the spring; some of them will flower the middle of March, in mild seasons, if planted in a warm border near a wall or other shelter, and others will succeed them, so that they will keep flowering until the general season for these flowers is come, which is towards the end of April.

It is said that the several varieties of these early-blowing tulips rise to different heights in their stems, and scarcely any two of them are equal. The Duke Van Tull, which is one of the first that appears in the spring, is generally very short-stalked, and the others, in proportion to their earliness, are shorter than those which succeed them; and the late-blowers are all considerably longer in their stems than any of the early-blowers.

The late-blowing tulips producing much finer flowers than the early ones, have engrossed almost the whole attention of the florists. It would be to little purpose to enumerate all the varieties, since there is scarcely any end of their numbers; and what some value at a considerable rate, others reject; and as there are annually many new flowers obtained from breeders, those which are old, if they have not very good properties to recommend them, are thrown out and despised.

It is observed further, that modern florists in Holland and Flanders, and our English florists from them, boast a prodigious variety of late-blowing tulips. And that Mr. Maddock of Walworth, in his catalogue of flowers for the year 1792, has no less than about five hundred and sixty-five of these admired beauties, all ranged under their proper families and colours, with their names and prices: besides the early sorts, double tulips, parrot-tulips, French tulips, and breeders. And moreover that the late-blowers are distributed into five families: 1. Primo Baguets, very tall; fine cups, with white bottoms, well broken with fine brown, and all from the same breeder. 2. Baguets Rigauts; not quite so tall, but with strong stems, and very large well-formed cups with white bottoms, well broken with fine brown, and all from the same breeder. 3. Incomparable Verports, a particular kind of Bybloemens; with midst perfect cups, very fine white bottoms, well broken with shining brown, and all from the same breeder: some of these are from two to five guineas a root. 4. Bybloemens; with bottoms white, or nearly so, from different breeders, and broken with a variety of colours: those of the Verports are cherry and rosy. 5. Bizarres; ground yellow, from different breeders, and broken with a variety of colours. These barbarous terms, used by the Dutch florists, are, it is said, a mixture of Dutch and French. Baguet is from the French baguette, a rod or wand, so named from its tall flender stem. Bizarre is also French, and the tulips of that family have the name from the variety and irregularity of their colours. Rigauts are probably from the name of some eminent florist, as Rigaud. The other terms are Dutch. Breeders are of one colour, and when broken produce new varieties.

It may be more particularly noticed in regard to each of the principal varieties of these tulips, that they, in every instance, comprehend a great number of intermediate ones, in so far as respects the colours and variegation, which takes place in the flower, notwithstanding each has been originally all of one and the same colour, particularly the feeding-raised bulbs, which after they have arrived to the flowering state, each separate flower is either wholly red, purple, violet, grey, brown, black, yellow, or some other individual colour, without any sort of variegation or stripe whatever, confounding simply of one-coloured flowers, with white bottoms, with yellow bottoms, and some with blue bottoms, with purple bottoms, and with blackish bottoms; all of which, while they retain this original sameness in the colour, are, in the peculiar language of the florist, termed whole-blowers or breeders, as each flower is wholly of one and the same colour. But on the bulbs or roots being planted out for one or two years, in properly prepared soils, in order to breed, or disperse them to gradually produce flowers, that break or run from the original single colour into variegations and stripes, in many different modes and forms, they are denominated breeders or variegated tulips, each different variegation constituting a separate and distinct variety, which mostly consists of flowers with white bottoms broken, with brown stripes, with blue stripes, with violet stripes, with rose stripes, with red stripes, and with some other kinds, separated by streaks of white, and other colours disposed in various ways; with yellow bottoms, broken with different reds, crimsons, and golden-yellow flakes, and also a variety of other colours; and some with blackish-purple, and other bottoms broken with stripes of dark colours, yellow, and tints of red; so that, particularly in these sorts of breeders or variegated tulips, which have white and yellow bottoms, there are, moreover, white and red striped flowers, white and purple striped, white and violet striped, white and rose striped, white and brown striped, violet and white flaked, red and white flaked, red and yellow flaked; and a great number of other intermediate variegations and stripes, disposed in an almost endless diversity of modes or manners.

The principal of these diversities or varieties are usually distinguished, in the language of the florist, by the names or titles of some great perfonage, eminent admirers or cultivators of flowers, places where first grown, or some other great mark of distinction; but there is such a multitude of new varieties raised annually from seed and seedling plants in different places, which are designated by new titles, without any relation to the old ones, and the fame sort of flower so often characterised by a different name, that it would be utterly impossible to give any satisfactory lift of the names of such a vast number of continually changing varieties, as has been suggested above.

It is said that the properties of a fine variegate late tulip, according to the best modern florists, are these: 1. They should be strong, upright, and tall; about thirty inches high. 2. The flower should be large, composed of six petals, proceeding a little horizontally at first, and then turning upwards, so as to form an almost perfect cup, with a round bottom, rather wider at top. 3. The three outer petals should be rather larger than the three inner ones, and broader at their base: all the petals should have the edges perfectly entire; the top of each should be broad and well rounded; the ground colour at the bottom of the cup should be clear white or yellow, and the various rich stripes, which are the principal ornament of a fine flower, should be regular, bold, and distinct on the margin, and terminate in fine broken points, elegantly feathered or pencilled. 4. The centre of each petal should contain one or more bold blotches or stripes, intermixed with small portions of the original colour, abruptly broken into many irregular obtuse points. Some florists, it is said, are of opinion that the central stripes or blotches do not contribute to the beauty of the tulip, unless they are confined to a narrow stripe exactly down the centre; and that they should be perfectly free from any remains of the original colour: it is certain that such flowers appear very beautiful and delicate, especially when they have a regular narrow feathering
feathering at the edge; but it is unanimously agreed, that the tulip should abound in rich colouring, distributed in a distinct and regular manner throughout the flower, except in the bottom of the cup, which should indubitably be of a clear bright white or yellow, free from fawn or tinge, in order to constitute a perfect flower.

The colours which are generally held in the greatest estimation in the variegated or striped sorts of tulips, are the blacks, the golden yells, the purple violets, the rose, and the vermillion, each of which being varied in different ways; but such as are striped with three different colours, in a distinct and unmixcd manner, with frong regular streaks, with but little or no tinge at all of the breeder, are supposed the most perfect. However, though it is extremely difficult to meet with such as posses all these efficacious properties of good flowers of this fort, yet many are found which have sufficient perfection to become of high value as fine flowers.

The double and parrot tulips, are it is said, held in no fort of esteem among florists. Among the flirli fort, however, there are many distinct varieties, in so far as regards the colouring of the flowers; as the yellow-flowered, the yellow and red-flowered, the white and red-striped, the white and blufh-coloured, besides a great number of intermediate variations. And in the latter, those with long hooked petals of flowers, confilling of yellow-flowered, red-flowered, red-striped, and other kinds.

The second species has the bulb ovate, and gibbous in the shape; the stem is quite simple, nearly upright, round, smooth, leafy in the middle, and attenuated at the base, with the flower always yellow in its colour, but a little greenish on the outside.

And it is further noticed, that it has most of these characters in common with the garden species; but the circumstances that abundantly distinguish this fort are, the narrow leaves, the nodding flower, the hairless at the base of the flarns and on the tips of the petals, and especially the simple obfute form of the fligma, which is totally different from that of the garden tulip: the flower too is fragrant; the pollen yellow, not black; and the anthers remarkably long. But in the Flora Danica they are represented as short and round.

As this sort of tulip is of much inferior beauty to that of the other and its several varieties, it is of course not nearly so much known and cultivated in flower-gardens, though it was formerly held in considerable estimation by some, before the Turkey kind became so very general; and it is still to be found in some of the older gardens of this nature, and is not underserving of a place in that of the modern ones, among the other sorts of tulips and spring flowers, for the purpose of its early blooming and increasing the variety.

Method of Culture.—All the different sorts of tulips may be increased by offsets from the roots, and by fowing seeds to produce new varieties. The offsets should be separated from the old roots every year in June, especially for the fine sorts, on taking them up when the flowering is over, planting them in nurfery-beds, in rows six inches apart, and to the depth of three, four, or five in the beginning of autumn, to remain for one or two years, until they attain the flowering state, and are proper for being set out regularly. They may also, in the old root, be planted in beds, or in the borders or other parts where they are to remain and blow, in patches of four or five, placed regularly; and to have a succession, they may be planted at different times; they are usually planted with a blunt dibble: the new roots should always be planted by themselves.

In this way the most approved sorts are propagated and continued always the fame, and the stocks of any good varieties multiplied and increased as may be necessary and convenient to the growers of them.

The early and late sorts should likewise be each put in, in places by themselves; and it is advised that the roots of the early blooming kinds should be planted the beginning of September, in a warm border, near a wall, paling, or hedge; as, when they are put into an open spot of ground, their buds are in danger of suffering by morning frosts in the spring. The soil for these should be renewed every year, or it is intended to have them fair. The best soil for this purpose is that which is taken from a light sandy patur, with the turf rolled amongst it, and to this should be added a fourth part of fen-land. This mixture may be laid about ten inches deep, which will be sufficient for these roots, as they need not be planted more than four or five inches deep at the root.

The offsets should not be planted among the blooming roots, but in a border by themselves, where they may be set pretty close together, especially when they are small; but these should be taken up when their leaves decay, in the same manner as the blooming roots, otherwise they would rot if the scion should prove very wet, as they are not so hardy as the late blowers, nor do they increase half so fast, so that more care is requisite to preserve the offsets of them.

When these sorts come up in the spring, the earth upon the surface of the beds or borders should be gently tilled and cleared from weeds; and as the buds appear, if the scion should prove very severe, it will be of great service to cover them with mats, for want of which many times they are blighted, and their flowers decay before they blow, which is often injurious to the roots, as is also the cropping of the flowers soon after they are blown; as their roots, which are formed new every year, are not at that time arrived to their full magnitude, and are of course deprived of proper nourishment or support.

When these flowers are blown, if the scion should prove very warm, it will be proper to shade them with mats, &c. in the heat of the day; and when the nights are frosty, they should be covered in the same manner, by which means they may be preserved a long time in beauty; but beauty: but when their flowers are decayed, and their feeding vellsy begin to wither, they should be broken off just at the top of the stalks, as when they are permitted to feed it injures the roots greatly.

In these sorts, when the leaves are decayed, which is usually before the late blowers are out of flower, their roots should be taken up, and spread upon mats in a shady place to dry; after which they should be cleared from filth, and put in a dry place where vermin cannot come to them, until the scion for planting them again, being very careful to preserve every sort separate; that it may be known how to dispose of them at the time of planting.

For this purpose, it is a good method to have large flat boxes made, which are divided into several parts by small partitions, each of which is numbered the same as the divisions of the beds; so that when a catalogue of the roots is made, and the number, fixed to each sort in the beds, nothing more is necessary in taking the roots, but to put every kind into the division marked with the same number in the bed. This saves a great deal of trouble in making fresh marks every time the roots are taken up, and effectually answers the purpose of preferring the kinds separate and distinct.

In raising these plants from seed, it is, from the time of sowing, seven or eight years before they produce flowers; and after all, they at first appear only single-coloured, often requiring two, three, or more years longer before they break into
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...into different colours or variegations; so that the teudion ... raifing feeding tulips, to a flowering state often deters from the undertaking. It is, however, the method by which all the fine varieties were first obtained, and by which new varieties are still annually gained; as many persons sow the same every year, in expectation that another will fix or seven years a new show of flowers will be produced, out of which many new varieties may annually discover themselves in each parcel. It is by this process the Dutch are so famous for furnishing such an infinity of fine varieties, supplying almost all other countries.

In effecting this business, great care should be used in the choice of the seed; the best is that which is faved from breeders which have all the good properties before related, for the seeds of flirled flowers seldom produce any thing that is valuable; and the best method to obtain it is to make choice of a parcel of such breeding tulip roots as are wished to be fed from, and place them in a separate bed from the breeders, in a place where they may be fully exposed to the sun, planting them at least nine inches deep, as when they are planted too shallow their stems are apt to decay before their feed is perfectly ripened: the flowers should be always exposed to the weather, as when they are shaded with mats, or any other covering, it prevents their perfecting the feed. About the middle of July, according to the season, the feeds will be fit to gather, as shown by the dryness of their stalks and the opening of the seed-veffels, at which time they may be cut off, and the seeds be preserved in the pods till the season for fowing, being careful to put them up in a dry place, otherwise they will be subject to mould and be rendered useless. The beginning of September is the proper season for fowing the seed; for which there should be provided a parcel of shallow feed-pan, or boxes, which should have holes in their bottoms to let the moisture pass off; these should be filled with fresh sandy earth, laying the surface very even, upon which the feeds should be fown thinly as regularly as possible; some of the same light sandy earth being grated over them, about half an inch thick. These boxes or pans should be placed where they may have the morning sun till eleven o’clock, in which situation they may remain till October, at which time they should be removed into a more open situation, where they may enjoy the benefit of the sun all the day, and be sheltered from the north winds, where they should remain during the winter season; but in the spring, when the plants appear with gravy leaves, they should be again removed to their first situation; and if the feed be dry, they must be refreshed with water while the plants remain green; but as soon as their tops begin to decay, no more should be given. The boxes should be placed in a shady situation during the summer season, but not under the drip of trees. The weeds and mofls should be kept constantly cleared off from the surface of the earth in the boxes, and a little fresh earth be fowder over them soon after their leaves decay; and at Michaelmas they should be fresh earthed again, and as the winter comes on, be again removed into the sun as before, and treated in the same manner, until the leaves decay in the spring, when the bulbs should be carefully taken up, and planted in beds of fresh sandy earth, which should have tiles laid under them, to prevent their roots from shooting downward, which they often do when there is nothing to stop them, and are destroyed. The earth of these beds may be about five inches thick upon the tiles, which will be sufficient for nourishing the roots while young. The distance of planting them need not be more than two inches, nor should they be planted above two inches deep. Toward the end of October it will be proper to cover the beds over with a little fresh earth about an inch deep, which will prevent the roots from the frost, and prevent mofls or weeds from growing over them; and when the winter is very severe, it may be proper to cover the bed either with mats or peat-haulm, to prevent the frost from entering the ground, as these roots are much tenderer while young, than after they have acquired strength. In the next spring the surface of the ground should be again gently stirred to make it clean, before the plants come up; and when the spring proves dry, they must be frequently refreshed with water in small portions during the time of their growth; and when the leaves are decayed, the weeds should be taken off, and the beds covered with fresh earth, as before, which should also be repeated again in the autumn. When the bulbs have been managed in this way two years, they should in the summer following, when their leaves decay, the roots being by that time considerably improved in growth, be again taken up, and planted in a fresh prepared bed, in drills three or four inches asunder, in which to remain two years longer; then, at the decay of the leaf, be again planted out into fresh beds, in rows as before, where they should be let remain to blow, being afterwards ordered as the flowering bulbs. When they are in full flower, they should be examined, in order to mark such of them as discover the best properties, that they may be separated from the others at the proper lifting season, and be replanted in beds by themselves for breeders; removing them annually at the proper season into different beds of opposite or contrary soils, as one year in poor hungry earth, the next in a much richer mould; continuing them till they break into variegations and stripes of different colours, which are the only modes by which it can be asfifted. When the leaves and flower-stems are decayed and withered, and the roots have ceased growing and drawing nourishment from the earth, it is the proper period for lifting or taking the old roots out of the earth, to reserve them till autumn for planting, being preferred in the manner which is directed for them above.

It may be noticed in addition, that all the ferts and varieties of tulips will grow pretty well and succeed tolerably in any foil where the earth or mould is moderately light and dry in the winter season, but that they delight most in such as are of a sandy vegetable earthy nature, and in an open sunny exposure. They are most injured by such as are of a retentive and wet damp quality, in which it is constantly necessary to have the beds in which they are put railed four or five inches above the common level of the rest of the ground. It is customary, however, with florists to have the beds for this purpose composed of and prepared with different kinds of materials of the sea sandy and earthy coorts, particularly for their finest kinds. But such trouble and expense are often quite unnecessary, as they succeed well enough without it; only care must always be taken not to plant them more than one or two years together, especially the fine sorts, in the same earth or bed, without changing the quality of the soil, in some measure, either altogether or in a partial manner, by some removal of the old and addition of new fresh portions of light mould, garden earth, or compost, or by a complete clearing away of the former earthy matter and the suppling of wholly new; thus rendering the blow of the tulips more strong as well as fairer. But as this is only practised for the particularly fine sorts in beds, those which are to be planted in the open border may be placed any where in the common foil, without any fear of their not flowering well.

In preparing the beds, or other parts, for the more choice sorts, the ground is to be well dug to the depth of one or two feet, and they are to be formed three or four feet in width, having alleys or intervals of one or two feet width
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width between them: the top or surface of each bed being raked quite even and smooth, in order for the bulbs or roots being put into it.

When they are in this state of readiness for being planted, a dry day is to be selected for setting out or planting the bulbs or roots, which is to be done in rows, either in the bedding method, drilling in rows, or that of dibble-planting, a blunt-edged instrument being employed in the last, by way of making the holes for the bulbs as sufficiently wide below as above, and perfectly clean quite to the bottom, making out the lines lengthways of the beds at eight or nine inches distance from each other, the roots being then set in finely to the depth of three or four inches, and at the distance of fix from each other in the lines. The work of planting being thus finished, the upper parts of the beds are to be raked even and smooth, which completes the whole.

The tulips intended for the open borders may either be planted in a regular line at a foot or eighteen inches distant from the edge, irregularly along it, or be disposed in separate small patches and clumps of three or four roots together in each, occupying spaces of about eight inches, some of which being placed more forwards, and others backwards, in order to afford greater diversity and variety.

When the old roots or bulbs have been thus planted out in the autumn, as they bear the winter well, nothing farther is required in their culture until the vernal and summer months, when they should be preferred in quite a clean state of growth, and in some cases the buds of the more choice sorts in the beds be sheltered and guarded from cold and severe weather in the nights, and at some other times by mats, supported archways on hoops, or other convenient means, though this is seldom absolutely necessary; or when the bedded sorts come into flower, to prefer their beauty and duration, to shade and screen them from the excessive noontide fun, heavy rains, and stormy winds, by an awning of canvas or mats raised across the beds, and, in some instances, formed in a tent-like manner, in order to walk under and view the flowers at pleasure; but the flowers will blow in great perfection without these coverings and trouble, only by means of them these fine sorts will blow and continue for a longer time in full beauty than would be the case if they were openly exposed. However, as soon as ever the flowers begin to fade, all such coverings should be carefully removed, in order to permit a free circulation of air, and have the full influence of rains, dews, &c. for the nourishment and support of the root-bulbs.

But when the flowering is quite past, and the flowers begin to die away, it is necessary and proper to cut off the heads or feed-vessels, especially of the fine sorts and varieties, that the roots may not be deprived of the proper quantity of nutriment for their full and perfect growth.

And in the middle of summer, when they are at rest, or have ceased growing, and the flower-items and other parts are quite decayed, it is time to lift or take up the old bulbs or roots, which should be done for the most part every year for the fine sorts, and every other year for the other kinds, not only for the purpose of separating the fuckers or young bulbs, but also for preferring both them and the old ones without any fort of growth out of the ground until the autumn, which is the time of planting them again in fresh or newly prepared beds for the future year's bloom. At this period, therefore, when the weather is dry, the work of lifting or taking them up should be begun, which should be done with a garden-trawl, as being the best and safest method, digging them up finely in a perfect and careful manner; and afterwards spreading them out in a shady, dry, airy place, where they may remain for a few weeks, without being acted upon by the sun or wet, and then become gradually dry and hardened; when the fuckers or young bulbs, the adhering earth, and the outer decayed skins or bulks, should be taken away and removed from them, after which both the old and the young offset bulbs should be again exposed to further drying, and more effectual hardening, in the same or other more proper situation, and be ultimately put safely into some dry receptacle separately, to be kept until the proper season of planting them out again takes place. Each sort of bulbs should be planted out in a separate manner, as already noticed. See Bulb and Root.

It may be remarked, that although the tulip may be said to be a plant of the perennial kind, yet that after the bulb of it has arrived at the flowering state or stage, the fame individual old root or bulb does not always remain and continue to flower anew, but gradually wears or wastes away, as is evident by its remains at the lifting season; but previously to its dissolution it affords from its sides a new supply of fuckers or young bulbs, which perpetuate the kind, one of which, being large and similar to the parent bulb, is capable of flowering equally strong for the succeeding year; so that at the end of many years, that which is often supposed to be the fame individual bulb, is in reality in every way another, or new one. In common, it is, however, termed the old bulb or root, by those who are unacquainted with the nature of such roots.

All the sorts and varieties of the tulip have flowers, which are succeeded by plenty of coarse seed in the latter summer months, that is contained in the cells of an oblong capsule, the different seeds being placed on each other in double rows.

In order to raise good seed, some heads of the best and stoutest plants of each sort should be selected and left in a proper situation to stand until they become in a perfectly ripe state, which is easily known by the items taking on a fine hard dry appearance, and the parts containing the seeds opening themselves, when they should be cut away, and the seed be taken out, and wrapped up carefully, or left to remain in them until the time of its being sown, preferring it in either way quite dry and free from any thing of a moudly nature.

In order to promote the acquisition of the vast and wonderful diversity of colouring which often takes place in tulips, and which, in many instances, is effected in a great measure by nature alone, the natural process is sometimes greatly assisted and expedited by means of proper culture and management. Thus, in the first place, when the young feeding bulbs of the whole blower or breeder have reached the full size, and have flowered once, by transplanting or removing them into beds of any sort of weak, poor, unfruitful earths, which, by their want of nutrient properties, may check and restrain the natural luxuriant tendency of the plants, and induce a weak enfeebled general growth, a change may be gradually produced in their general state, whereby they may break out into new variations in the first, second, or third years. And accordingly, as this happens, they should be planted out into beds of good earth, as has been directed above.

Another means of assisting nature in accomplishing this object is, that of making as great a change in the quality of the soil as possible, as if they were this year planted in a weak poor sort of earth, they should in the following be set out in a highly rich garden mould, and afterwards in a compot of several sorts of earth: or they may be removed and transplanted from one part of a garden to another; and
into different gardens; or in any other familiar methods. All these various ways contribute in a great degree to afford in, and promote the production of, this desirable diversity of colours and variegations.

The roots of all the sorts and varieties of the tulip are kept for sale in large collections by the nursery and seedmen, who have them every year in great quantities from Holland and other places, each variety of which is distinguished by some appropriate name, as has been already noticed, and arranged in regular catalogues, the prices being charged in proportion to the estimation in which they are held, which were formerly very extravagant, but are now more moderate, on account of their abundance, as from seven or twelve shillings, to as many pounds the hundred, and not unfrequently considerably more for scarce, curious, and capital sorts. The most eligible and proper season for buying or laying in a collection is in the early part of the autumn, as from August to November.

For the main collection of flowers to blow in the spring and early summer, the most proper time of planting the roots or bulbs is in the autumn, from the end of September to December; but to have a later bloom in succession, some may be planted out about the close of the year, and in the two beginning months of the new one. These last, however, will seldom grow so strong as those of the autumn planting.

The roots of the late sorts of tulips may be planted in any common beds, or in the borders, as they are not much liable to be injured by bad weather. But those of the fine or more valuable sorts of the early, as well as the late kinds, are in general, for the most part, dispersed together, as has been seen, in beds by themselves, in order to exhibit a grand blow, and be defended in the manner which has been explained.

However, some of the inferior common sorts, and even any of the capital varieties, may occasionally be distributed about the ordinary borders, in affinage with other spring flowers of the bulbous-rooted and other kinds, in the ways which have already been directed, where they have often a fine effect when in their blowing state.

The double variety of the common tulip is very beautiful, though not held in such estimation by the florist as the common single variegated sorts, from their not polluting that profusion of variegations in their colours, or such a regularity of stripes. They, however, exhibit an elegant ornamental appearance in their upright, tallish, firm stems, and the crowns of large double flowers at the tops, formed somewhat as in those of the double peony, but far more beautiful in their diversity of colours, variegations, and stripes of white and red, or yellow and red, &c. On these accounts they certainly deserve to be cultivated either alone in beds, at a little distance from the other sorts, for the sake of increasing the variety; or in patches about the borders, in affinage with the common large variegated tulips, as blowing nearly about the same time in the later spring months.

The early dwarf sorts are the most proper for forcing for early blowing, and also for being placed in glasses, in rooms, &c. These sorts are sometimes rendered more early in their blowing than would otherwise be the case, by planting the roots or bulbs in pots or boxes in the autumn or winter season, and placing them in the house, or a hot-bed of tanner’s bark, thereby bringing them into blossom in the month of January, or sooner, and continuing succussions of them, until the natural ground blossoms are ready. A quantity of bulbs is also sometimes placed upon phial-glasses containing water, a single bulb in each, during the same season, which are then put into a warm light room in the house, near the windows, or into a greenhouse or flowe, in which way they often flower very agreeably in the winter and early spring, as they are well suited to such modes of cultivation.

These sorts of roots or bulbs are likewise kept by the nursery and seedmen for the purpose of sale in pretty large collections of the different kinds, under titles which are chiefly French or Dutch, as may be seen by the catalogues of those flowers which they exhibit.

Roots of these sorts may be planted out in any good, light, rich, earthy soil, where the situation is warm at the season, and in the manner stated above, in speaking of the general culture of tulips, when they will rise soon in the vernal months, and reach the blowing state about March, continuing until the late tulips come into flower. They, however, succeed best when allowed a sheltered sunny situation, as they rise and flower so soon in the spring while the weather is often cold and pinching. Some of them look extremely well in the fronts of warm borders, in small patches, in affinage with anemones, ranunculuses, and other similar kinds.

The second species may be managed in the same manner as those of the common sort, in so far as its culture is concerned, in much the same way, having nearly the same treatment in every respect.

They are all highly ornamental flowers, from their much varied and most beautiful colours; but those of the common garden sort, and its numberless varieties, are the most generally introduced, being admirable ornaments for beautifying the various flower borders and other parts of gardens and pleasure-grounds during some weeks in the spring and summer seasons.

TULIPIFERA, in Botany, the Tulip; see Liriopodenbreon; see also Magnolia, of whose sorts are called Tulip-trees.

TULISCHANA, in Geography, a river of Russia, which runs into the Podkamenka Tunguska, N. lat. 61°. E. long. 97°. 35'.

TULISKOWO, a town of the duchy of Warsaw; 16 miles N.N.E. of Kalisz.

TULL, Jethro, in Biography, a distinguished agriculturist, was a descendant of a respectable family in Yorkshire, educated at one of the universities, and admitted a barrister of the Temple towards the commencement of the 18th century. Returning from the tour of Europe, in which his attention was particularly directed to agricultural subjects, he married, and settled upon a paternal farm in Oxfordshire, which gave him an opportunity of prosecuting a variety of experiments in husbandry. Upon his return from France and Italy, which he was under a necessity of visiting on account of his impaired health, and with a fortune also impaired, he took a farm near Hungerford, in Berkshire, where he purposed his plans for improved cultivation. His grand principle was, that labour and arrangement would supply the place of manure and following, and raise more grain at a less expense. (See Horne, Husbandry, and Drif-Husbandry.) Tul, in 1731, printed "A Specimen" of his system; and in 1733, "An Essay on Horne-hoeing Husbandry," fol. which was translated into French by Du Hamel. He purposed his system till his death, which happened in Jan. 1740.

TULLA, in Geography, a town of Arabia, in the province of Yemen; 25 miles W.N.W. of Sana.

TULLAGH, a small poll-town of the county of Clare, Ireland; 102 miles W.S.W. from Dublin.

TULLAGHAN, a bay of the county of Mayo, Ireland into
TULLAMORE, a post-town of the King's county, Ireland, so called from the river Tullamore, which divides it into two nearly equal parts. This is a neat thriving town, owing partly to the well-directed exertions of the proprietor, Lord Charleville, whose benevolence extends to the suburbs, and partly to the advantage of the Grand Canal palling close to it. Here are a barrack and market-house; and, what is of still greater importance, the linen manufactury has been introduced with a prospect of success. Tullamore is 46 miles W. by S. from Dublin.

TULLE, a city of France, and capital of the department of the Corrèze; before the revolution the capital of Lower Limousin, and see of a bishoprufffragant of Bourges; 58 miles S. of Paris. N. lat. 45° 16'. E. long. 1° 51'.

TULLEN. See Toolen.

TULLINS, a town of France, in the department of the Ière; 12 miles N.N.E. of St. Marcellin.

TULLIS CREEK, a river of Virginia, which runs into the Potomack, N. lat. 39° 33'. W. long. 78° 2'.

TULLN, a town of Austria, on a river of the same name; the see of a bishop, suffragan of Paffau; 13 miles W.N.W. of Vienna. N. lat. 48° 18'. E. long. 16° 3'.

TULLO, a river of Austria, which runs into the Danube, at the town of Tulln.

TULLOARGAUM, a town of Hindoostan, in Vihapour. In 1779, when general-majour Egerton was marching towards Poonah, this town was burned by the Mahrattas themselves; 12 miles N.W. of Poonah.

TULLOCHARD, a mountain of Scotland, in the south-west part of Ross-shire. In frequent times, by burning pitch on this mountain, all the tenants and valets of Seaforth assembled at the castle of St. Donan in twenty-four hours.

TULLONG. See Pullo-Tullong.

TULLOON, a town of Hindoostan, in the circear of Sirhind; 35 miles W. of Sirhind.

TULLOW, a post-town of Ireland, in the county of Carlow, pleasantly situated on the river Slaney, over which it has a bridge of six arches. The castle, which was deemed formidable, and which was reduced by Cromwell, has been converted into a barrack. Here are a neat church and a good market-house; and near the bridge the ruins of an old abbey, which, with all its poffessions, was granted by queen Elizabeth to Thomas, earl of Ormond, in 1557. Tullow is 38 miles S.S.W. from Dublin.

TULLUM, TouH, in Ancient Geography, a town of Gaul.

TULLUS HOSTILIUS, in Biography, was elected king of Rome, after the death of Numa, in the year B.C. 672.

He began his reign with rendering himself popular, by dividing a portion of the regal lands among those who had no such property; but deviating from the course pursued by his paffion predecessor, he contrived by a stratagem to engage the Romans in a war with the Alans. The Alans declining a combat, Tullus propofed an union between Rome and Alba, and for the accomplishment of this object, that the principal Alban families should settle at Rome. To this proposal the Alans objected, but it was agreed that the superiority of either city should be decided by a combat between three perions of each city. (See Curiathi and Horati.) The superiority of Rome having been thus determined, Tullus proceeded to punish the Fidenates for their alleged mifconduct in the Alban war; and having summoned Mettius Fufettius, the Alban dictator, to join him with the troops of his nation, the dictator apparently complied, but in an engagement that ensued proved treacherous. The Romans, however, obtained a complete victory. Tullus and Mettius practiced the same kind of dissimulation: whilst the former courteously received the congratulations of the latter, he sent a body of troops to demolish the city of Alba in the absence of its soldiers, and at the same time ordered the Roman and Alban troops to attend him in his camp unarmed, but he privately instructed the Romans to provide themselves with swords under their garments. Charging Mettius with perfidy, he ordered him to be feized, and to be fastened between two chariots, and thus to be torn asunder, as an emblem of his attempt to diffuse the union of the two states; the first and least example, says Livy, of a punishment in which little regard was paid to human laws! His accomplices were also put to the sword; the rest of the Alans were conveyed to Rome, and henceforth formed one people with the Romans. Alba, with the exception of its temples, was razed; and for the accommodation of these new inhabitants, mount Caesium was taken into the confines of Rome.

Having subdued the Fidenates, Tullus made war against the Sabines and conquered them, and then summoned the Latin towns dependent upon Alba to acknowledge the supremacy of Rome, whose country, on their refusal, he invaded. In his old age, however, he exchanged his military prowess for the weaknesses of superstition; and terrified by prodigies and apprehended tokens of the displeasure of the gods, he had recourse to a variety of expiatory rites. The manner in which his life terminated has been differently represented. Some fay that his palace was struck by lightning, which destroyed him and his family; whilst others have charged his murder on Ancus MARTIUS, his successor, who is also suspected of having let fire to his palace. He died, however, after a reign of thirty-three years, during which he enlarged the size and population of Rome, with little addition to its territories. Livy. Dionyf. Hal. Gen. Biog.

TULLY, in Geography, a town of Hindoostan, in the circear of Ellichpaur; 20 miles E.S.E. of Ellichpaur.

TULLY, a township of New York, on the S. line of Onondaga county, 14 miles S. of Onondaga; bounded N. by Otisco, E. by Fabius, S. by Cortlandt county, W. by Spafford, which was erected from the W. half of Tully in 1811. It is now formed of the N.E. quarter of the military township of Tully, the S. half being Preble, in Cortlandt county. Its waters are small, being head-dreams of Onondaga creek, and also of Tioquhino creek, of Che- nango, of the Susquehanna, &c. The whole is well watered by springs and brooks. Like Spafford, this town has ridges of hills on the E. and W. boundaries, but its valleys are extensive, rich and productive. Tully flats are much admired. The settlements commenced about 1796, and the lands are held by right of soil, principally by farmers from the eastern states. In 1810, the population was 1292, and the senatorial electors 67; but these aggregates are now diminished nearly one-half by the erection of the town of Spafford from the W. part in 1811. Tully is now about five miles square.

TULLYCLEA, a small river of Ireland, rising in the southern part of the county of Tyrone, and discharging itself into lough Erne, a little to the north of Devenish island.

TUMERO, a town of South America, in the province of Venezuela, situated in the vale of Aragen, two leagues from Maracay. This town is modern, well built, and the residence of a number of planters; but it is peculiar the abode of all the officers, factors, and persons employed in the administration of the tobacco cultivated in its viciniry,
vicinity, on account of the king. Here are a handsome church, a vicar for the religious department, and a tenant of justice for the civil. Its population consists of 8000 persons.

TULOMA, a river of Russia, which runs into the Ladoga lake, 32 miles N.W. of Olonetz.

TULON, a town of Tibet; 45 miles E. of Tankia.

TULONIUM, in Ancient Geography, a town of the interior of Spain, belonging to the Varduli, according to Ptolemy. In the Itinerary of Antonine, this place is on the route from Affuria to Burdigala, between Suffatium and Alba.

TULOS, a word used by some medical writers to express a callus.

TULOSTOMA, in Botany, so named by Peroon, from tulos, a wart, or other protrusion from the skin, or fistula, and stom, the mouth; which is exactly descriptive of the little orifice, by which the powdery seeds of this fungus are discharged.—Perf. Syn. Fung. 139. (Lycoperdon; Tourn. t. 331. f. E. F. Lamarck Illust. t. 887. f. 3.)—Clas and order, Cryptogamia Fungi. Nat. Ord. Fungi.

Eff. Ch. Receptacle coriaceous, globular, stalked, discharging the powdery seeds, intermixed with hairs, by a cylindrical cartilaginous mouth.

1. T. brunnea. Common Stalked-Puff-ball. Perf. n. 1. (Lycoperdon pedunculatum; Linn. Sp. Pl. 1654. Hudf. 643. With. v. 4. 379. Sowerb. Fung. t. 206. Dickf. Dr. Pl. n. 100. Bulliard Fung. v. 1. 161. t. 294.)—Stalk nearly smooth, solid. Orifice flatish. Found on the mossy tops of walls about Paris and London, in the winter or spring. It may easily be overlooked for some common unexpanded Agaric. The stalk is an inch and a half high, cylindrical, not quite straight, of a light brown, or tawny-colour, fixed by fibrous annual roots. Head globose, smooth, half an inch or more in diameter, with a small, regular, orbicular orifice at the top, whose edges are flat and cartilaginous.

2. T. squamosum. Scaly Stalked-Puff-ball. Perf. n. 2. (T. brunnea; ibid. Lycoperdon pedunculatum; Sowerb. Fung. t. 206, the dissected figure, and some near it. L. pedunculatum axiferum; Bulliard Fung. v. 1. 161. t. 471. f. 2. L. album mammosum, pediculo longo et velutii squamo- mofo, ac fultulo, donatum; Mich. Gen. 218. f. 97. f. 7.)—Stalk scaly, hollow, with a central thread. Orifice prominent, tubular. Found by Micheli, on banks near Florence. Mr. Sowerby received his specimens from Norfolk, by favour of the Rev. Dr. Sutton. Bulliard seems to have gathered his in France. We presume this must be a distinct species, well marked by the above characters.

3. T. giganteum. Great Stalked-Puff-ball.—Stalk woody, clothed with upright scales.—Gathered at Owbyhee, by Mr. Archibald Menzies. Mr. Sowerby says this is "a gigantic representation, as it were," of the common kind, the stalk being twice as long, and four times as thick, more woody, and sometimes truly squamoso, the squamae pointing upwards. The size of the head is in proportion. We know this fungus only from Mr. Sowerby's incidental account, but have no doubt of its being a distinct species, in which more particular investigation might discover more decisive characters; and on this account we record it here.

TULOUR, or TANNA LABU, in Geography, an island in the East Indian sea, about 90 miles in circumference. N. lat. 4° 45'. E. long. 124°.

TULP, Nicholas, in Biography, an eminent physician, was the son of an opulent merchant, and born at Amsterdam in 1593. Having studied and graduated at Leyden, he settled in his native city, and rose to a high rank, not only in his profession, but as a citizen. Under the latter denomination he was distinguished by the high parts which he occupied, and by the services which he rendered to his country. As burgomaster, to which station he was advanced in 1652, he refuted the invasion of Holland by Lewis XIV. in 1672, and thus faved his country; on which occasion a medal was struck to his honour with this motto, from the Æneid, "Vires ultra sortemque feneçte." Having completed his 80th year, he died in 1674. Tulp's "Observationum Medicinarum Libri tres," 1642, 12mo. have been several times reprinted, and contain many valuable physiological remarks. He is said to have been among the first who observed the leafy vesicles. Hallay. Elyo.

TULPEHOCKEN, in Geography, a township of Pennsylvania, in the county of Berks, which, together with Bern and Bethel, contains 5800 inhabitants.

TULPEHOCKEN Creek, a river of Pennsylvania, which runs into the Alleghany, N. lat. 40° 22'. E. long. 76° 58'.

TULSK, a poït-town of Ireland, in the county of Roscommon. The promiscuous and indiscriminate ruins of castles and churches, bear ample testimony to its former importance, but it is now a wretched village. Tulkf was represented in the Irish parliament, but lost its privilege at the Union. It is 75¼ miles W. N.W. from Dublin.

TULSKOE, a government of Russia, bounded on the north by Moskovkaia, on the east by Riazankoe and Tambovkoe, on the south by Orovskoe, and on the west by Kabzikoe; 120 miles long, and from 40 to 100 broad. Tula is the capital. N. lat. 53° to 55°. E. long. 36° to 38°.

TULUM, a town of Peria, in the province of Ghilian; 10 miles S. of Refid.

TULUN, a town of Russia, in the government of Irkutsk, on the Ija; 44 miles E. of Niznii Udink.

TUMAGURRA, a town of Bengal; 18 miles N. of Toree.

TUMANSKOI, an island of Russia, in the Frozen Ocean, of a triangular form, lying north of the Isle of Kirlach, from which it is divided by a narrow channel; about 360 miles in circumference. N. lat. 71° 50' to 73° 15'. E. long. 119° to 126°.

TUMANUNA, in Ancient Geography, a municipal town of Africa, in Mauritania Cæsariensis, according to the Table of Peutinger.

TUMARRA, a town of Africa, in Mauritania Cæsariensis. Ptolemy.

TUMB, or TOMBO, or PETOMBO, or CATOMBO, or SLENGE, or Great Tomb, in Geography, an island in the Persian gulf, about three miles in length from east to west, and much frequented by tnankees from the Arabian shore, which refise here a week or ten days for the benefit of fishing. A sandy bay on the east side feoms a good landing-place. N. lat. 26° 24'. E. long. 55° 38'.

TUMB NAMIU, or Little Tumb, a small island in the Persian gulf; 10 miles S.W. of Tumb.

TUMBABA, a word used by chemists to express sulphur vivum, or crude sulphur.

TUMBACH, in Geography, a town of Bavaria; 17 miles N.N.W. of Amberg.

TUMBADO, a small island among the Bahamas. N. lat. 26° 24'. W. long. 79° 30'.

TUMBALA, a word used by some authors, to express the sqamae, or scales, of any metal.

TUMBALI, in Geography, a town of Hindoostan, on the coast of Malabar; 25 miles S. of Cochin.

TUMBELAN, TUMBELAN, TUMBERIDIPAL, a town of Hindoostan, in Myf ore; 22 miles N. of Darapuram.

TUMBEZ,
TUMBEZ, a town of Peru, in the jurisdiction of Piura, near a river of the same name, which discharges itself into the bay of Guayaquil, almost opposite to the illand of St. Clare. Barks, boats, balzas, and canoes, may go up and down this river, being three fathoms deep, and twenty-five broad; but it is dangerous going up it in the winter season, the impetuosity of its current being then increased by torrents from the mountains. At a little distance from the Cordillera, on one side of the banks of the river, stands the town of Tumbuz, in a very Randy plain, interposed with some small eminences. The town consists only of seventy houses, built of cane, and thatched, scattered up and down, without any order or symmetry. In these houses are about 150 families of Mefitos, Indians, Mulattoes, and a few Spaniards. There are, besides these, other families living along the banks of the river, who having the convenience of watering their grounds, continually employ themselves in rural occupations. The heat is excessive; nor have they here any rain, for several years successively; but when it begins to fall, it continues during the winter. The whole country, from the town of Tumbuz to Lima, contained between the foot of the Cordillera and the sea, is known by the name of Valles. Tumbuz was the place where, in 1526, the Spaniards first landed in these parts of South America, under the command of Don Francisco Pizarro, and where he entered into several friendly conferences with the princes of the country, but was slain by the Incas. If the Indians were surprised at the flight of the Spaniards, the latter were equally so at the prodigious riches which they everywhere saw, and the largeness of the palaces, castles, and temples, of all which, though built of stone, no vestiges are now remaining. 280 miles N. of Truxillo. S. lat. 3° 13'. W. long. 80° 6'.

TUMBLER, a name given to a particular species of pigeon, called by Moore the * columba revolutionis*. See *Pigeon*.

It has its name from its peculiar property of tumbling when it is in the air, which they are very fond of doing; and effect exactly in the same manner as our posture-matters do it; by throwing themselves over backward. It is a very small pigeon, and is always short-bodied, full-breasted, thin-necked, narrow-beaked, and has a small short head; the iris of the eye in this species is usually of a bright pearl-colour.

The English tumbler is usually of one plain colour; black, blue, or white: the Dutch is much of the same make, but has different colours, and is sometimes feathered on the legs; it has also a larger head, and thin skin round the eye. Some of the finest pigeons of this sort are bred from a mixture of the Dutch and English kinds. These pigeons are remarkable for the height to which they fly; they never ramble far from home, but will rise almost perpendicularly, till they appear no larger than a sparrow, or become quite out of sight; they will often keep at this height five or six hours, and then come gradually down again: they never tumble when they are at any great height, but only as they ascend or come down again. There are particular times also, at which these birds will take much higher flights than at others; but they ought to be kept by themselves, and practiced to it by the company of one of their own species; for if they mix while young with other pigeons, they will learn to fly as they do; a flight of a dozen of these birds sent out together, will keep so close, as to be all in a compas that might be covered with a handkerchief; but they should never be turned out in foggy weather, or in high winds; in the first cafe, they lose sight of their home, and perhaps never find it again; and in the other, they are blown away; and if they return, it is not till another day; in the mean time lying out, they are in danger of cats, and other accidents.

Lastly, the hen should never be turned out with egg, for she is then sick, and not fit for flying; and beside often drops her eggs, and the breed is lost by it. Moore's *Colurnariam*. p. 30.

TUMBLER is also a fort of dog, called in Latin *vertagus*, from his quality of tumbling and winding his body about, before he attacks and falls on the prey. See *Dog*.

This species took its prey by mere subtlety, depending neither on the sagacity of its nose, nor its swiftness; if it came into a warren, it neither backed nor ran on the rabbits; but by a seeming negligence of them, or attention to something else, deceived the object till it got within reach, so as to take it by a sudden spring.

These dogs are often less than hounds; being lanker, leaner, and somewhat prick-eared; and by the form of their bodies, they might be called mungrel greyhounds, if they were a little bigger. They seem to answer to our modern lurchers.

TUMBLING-BAY, in a Canal, is the same with overfall or weir; which fee.

TUMBLING DAM, in Geography, a place on the river Delaware; 20 miles above Trenton.

TUMBLING-HOME, the inclination of the top-fides of ships from a perpendicular towards the centre or middle line of the ship. The top-fides of three-decked ships have the greatest tumbling-home, not only from their being lofier, but for the purpose of clearing the upper works from the smoke and fire of the lower guns. The advantages and disadvantages of tumbling-home fides will be found discussed in *Ship-building*; which fee.

TUMBREL, TUMBRELUM, a ducking or cucking-fool, an engine of punishment, which ought to be in every liberty, that has a view of frank-pledge, for the correction and cooling of scolds, and unquiet women.

TUMBREL, in Artillery, is a kind of carriage with two wheels, used to carry the tools of the pioneers and miners, and sometimes likewise the money of the army.

TUMBREL is also a common name for a dung-cart.

TUMBRIAL, SHEEP, a contrivance of the balsket kind for the purpose of keeping different sorts of food for the use of them. It consists of a fort of circular cage or balsket made of osiers, willows, or any other plants of the bruswood kind. It is about ten feet in circumference in the whole, and closely wattled to the height of about one foot, above which it is left open for the space of eighteen inches; it is then wattled again to the height of eight or ten inches more, and an opening, about eighteen inches in breadth, is left at the top, for putting in the hay, roots, or other sorts of food, whether green or dry. The flaves which form the skeleton of it are put ten inches asunder, so that twelve sheep may feed at it at the same time.

Considerable advantage may be derived from this simple contrivance in the feeding of these animals, as it not only effects a material reduction in the consumption and expense of the provender, which is by this means prevented from being trodden under foot, or foiled by the dung; but in this state of separation the stronger sheep cannot drive away the weaker, as each is secured by the head. And as the construction of such tumbrils is attended with no difficulty, they may be easily provided and conveyed to any part of a farm, and with due care be kept in constant use for eight or ten years, or even much longer.

TUMBUK, in Geography, a town of Africa, in Kordofan; 180 miles S.W. of Sennar.
TUMEFACION, the act of swelling, or rising into a tumour.

Inflammations and tumefactions of the testes frequently happen in the gonorrhoea; either from the weaknesses of the vesicles, violent motion, unseasonable use of astringents, a neglect of purging, or the like.

TUMEN, in Geography, a town of Persia; 18 miles W. of Reifhd.

TUMERIZ, a town of Moravia, in the circle of Brunn; 6 miles W. of Nicoldburg.

TUMEX, in the Materia Medica of the Ancients, a name given by authors to a sort of sly, the fame with the cadium placentis of Dioscorides and the Greeks. This was a worse kind than the botrysis. See Tsaphari.

TUMMARAH, in Geography, a town of Africa, in Sahara.

TUMMEL, a large river in Perthshire, Scotland, rises on the confines of Argyleshire. Near its source it forms a broad lake, called Loch Rannock, at the termination of which the river assumes the name of the Tummel. In its progress it forms another lake, called Loch Tummel, in which is a small island, with an old fortress or castle, formerly the residence of the chief of the clan of the Robertsons. The whole course of the Tummel is rapid and furious, and in several places forms very romantic and picturesque cascades. One of its falls, near its junction with the Garry, is particularly grand, as its whole water is precipitating over the broken rocks with astonishing violence. After its union with the Garry, the character of the Tummel feems entirely changed: before, it was an impetuous torrent; it now becomes a quiet and placid stream. The banks below the junction are extremely rich, and the river meanders through a fine valley; now dividing its stream, and forming small islands, now running in a broad sheet. Though the Tummel is smaller than the Garry, it gives the name to the river formed by their union, because it can trace its origin farther back than the Garry, which is composed of the waters of the neighbouring hills, while the source of the Tummel is a considerate lake, in its course from which several distant streams contribute to its importance. The Tummel pours its waters into the river Tay at Logierait.—Garnet's Tour through the Highlands, 4to. 1800. Beauties of Scotland, vol. iv. Perthshire, 1806.

TUMNEROO, a town of Meckley; 25 miles S.E. of Munnypour.

TUMMOO, a town of Meckley; 45 miles S. of Munnypour.

TUMOURS. The meaning of the word tumour, in Surgery, is exceedingly comprehensive; for it applies generally to the growth of all distinct superfluous parts, or substances, which did not make any portion of the original structure of the body, as well as to every morbid increase in the bulk of other parts, which naturally and always existed in the human frame. Within this definition will come the greater number of diseases; as effeite or droppy, broncheocele, adenoma, fungus hematudes, hydrocele, ganglions, inflammations of various organs, mobile swellings, aneurisms, abscebes, hemorrhoids or piles, exsudates, exerstences, polypi, hernie or ruptures, stfribus, sturts, &c. &c. (See these words.)

Had it, therefore, entered into our arrangement to consider, in the present article, all the diseases which may be classed as tumours, we should have had a very tedious and laborious task indeed, namely, that of writing out and prenaming to the reader, in this part of the Cyclopaedia, a description of the nature and treatment of at least two-thirds of all the diseases usually considered as surgical. Our plan, however, has been different; and for the sake of avoiding all occasion for so long a production, we have treated of numerous kinds of tumours in separate articles, which are alphabetically distributed in this Dictionary.

In the present article, we propose to offer a few general remarks on the formation of tumours; to describe particularly those of the cystified and sarcomatous kinds; and to give some account of the manner of removing tumours in general.

It is difficult to give altogether an unobjectionable account of the formation of tumours, the secrets of which proceeds will perhaps never be disclosed. We know that parts become thickened and enlarged by inflammation; but the causes of the origin and growth of all such swellings as conflit of some new production, which made no part of the original composition of the body, may be said to be totally unknown. In Mr. Abernethy's surgical works will be found some remarks upon this subject, which are more rational and interesting than those generally advanced.

"The incipient state of tumours," he observes, "will naturally first engage our attention; and those which perhaps form the best example and illustration of the subject, are such as hang into cavities from the membranous surfaces, which form their boundaries. The cause of tumours having a pendulous attachment attracted the attention of Mr. Hunter, who made the following remarks on the formation of one on the inner surface of the peritoneum, as is related by Sir E. Home, in the Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, vol. i. p. 231. 'The cavity of the abdomen being opened, there appeared lying upon the peritoneum a small portion of red blood recently coagulated; this, upon examination, was found connected to the surface, upon which it had been deposited, by an attachment half an inch long; and this neck had been formed before the coagulum had lost its red colour.'

Now had vessels that this slender neck, and organized the clot of blood, as this would then have become a living part, it might have grown to an indefinite magnitude, and its nature and progress would probably have depended on the organization which it had assumed. I have," says Mr. Abernethy, "in my poiffeion a tumour, doublets formed in the manner Mr. Hunter has described, which hung pendulous from the front of the peritoneum, and in which the organization and consequent actions have been so far completed, that the body of the tumour has become a lump of fat, whilst the neck is merely of a fibrous and vascular texture. There can be little doubt, but that tumours form every where in the same manner. The coagulable part of the blood, being either accidentally effused, or deposited in confequence of disafe, becomes afterwards an organized and living part, by the growth of the adjacent vesseis and nerves into it. When the deposited subflance has its attachment by a single thread, all its vascular supply must proceed through that part; but, in other cases, the vessels shott into it irregularly at various parts of its surface. Thus, an unorganized concrete becomes a living tumour, which has at first no perceptible peculiarity as to its nature: though it derives a supply of nourishment from the surrounding parts, it seems to live and grow by its own independent powers; and the future structure, which it may acquire, seems to depend on the operation of its own vessels. When the organization of a gland becomes changed into that unnatuural structure, which is observable in tumours, it may be thought in some degree to contradict those observations; but, in this case, the subflance of the gland is the matrix, in which the tumour is formed.

"The structure of a tumour is sometimes like that of the parts near which it grows. Those which are pendulous into joints
TUMOURS.

Joints are of a cartilaginous or osseous fabric; fatty tumours frequently form in the midst of adipose substance; and I have seen some tumours growing from the palate, and having a slender attachment, which in structure resembled the palate. Sometimes, however, they do not resemble in structure the parts from which they grow. The incidence, just mentioned, of the pruniform portion of fat growing from the perilunum, will serve as a proof: the vessels, which had first into it, made the tumour into fat, whilst the neck was a fibrous and vascular structure. I have seen osseous tumours unconnected with bone, or periosteum; and, in general, the structure of a tumour is unlike that of the part in which it is produced. Therefore, we fear warranted in concluding, that, in many cases, the nature of the tumour depends on its own actions and organization; and that, like the embryo, it merely receives nourishment from the surrounding parts.

"If, then, the coagulable part of the blood be from any cause effused, if the adjacent absorbents do not remove it, and the surrounding vessels grow into it, the origin of a tumour may be thus formed. It may be right," says Mr. Abernethy, "to reflect a little on the causes which may occasion a deposition and consequent organization of the coagulable part of the blood; as such reflections throw light on the nature and growth of tumours, and lead to the establishment of principles, which are applicable to tumours in general. The deposition of the coagulable part of the blood may be the effect of accident, or of a common inflammatory process; or it may be the consequence of some diseased action of the surrounding vessels, which may influence the organization and growth of the tumours.

"In the former cases, the parts surrounding the tumour may be considered simply as the sources from which it derives its nutriment, whilst it grows apparently by its own inherent powers, and its organization depends upon actions begun and existing in itself. If such a tumour be removed, the surrounding parts, being found, soon heal, and a complete cure ensues. But if a tumour be removed, whose existence depended on the disease of the surrounding parts, which are still left, and this disease be not altered by the stimulus of the operation, no benefit is obtained: these parts again produce a diseased substance, which has generally the appearance of fungus; and, in consequence of being irritated by the injury of the operation, the disease is in general increased by the means which were designed for its cure. It appears, therefore, that, in some cases of tumours, the newly formed part alone requires removal; whilst, in others, the surrounding substance must be taken away, or a radical cure cannot be effected."

"There is yet another circumstance deserving attention," says Mr. Abernethy, "before I proceed to the particular consideration of the subject; which is, that a tumour, once formed, seems to be a sufficient cause of its own continuance and increase. The irritation which it causes in the contiguous parts, is likely to keep up that increased action of the vessels, which is necessary to its supply; and the larger it becomes, the more does it stimulate, and of course contribute to its own increase."

"Suppose then a tumour to have formed and increased; it will continue to grow, and to consume the surrounding cellular substance, and thus acquire for itself a kind of capsule. Tumours are more closely or loosely connected to the surrounding parts; which circumstance seems to depend upon the degree of stimulus which they occasion, and the inflammation which they thus excite. This irritation perhaps may be the cause why some tumours, which are in their first increase, grow rapidly after they have acquired a certain size." See the Surgical Works of John Abernethy, F.R.S., &c. vol. ii. p. 7, et seq.

We regard the preceding account of the formation of tumours as the most rational and probable which has hitherto been offered.

All tumours, which are such as may be termed new-formed parts, and did not enter into the original structure of the body, appear to be ended with inferior powers of life, and are much sooner destroyed by inflammation than other parts, which always naturally existed in the animal frame. The knowledge of this fact has led to the method of curing several kinds of tumours, by the application of stimulating substances to them; but it is not a plan of treatment which will invariably answer. Some tumours are so large, that the constitutional illness, which would arise from the inflammation and sloughing of the whole of their mass, would in all probability be fatal. Some swellings are of a malignant, irritable character, so that applying stimulants to them is more likely to exasperate than cure the disease. Hence, it is generally deemed improper to apply caustics to cancerous affections; because unless every particle of such diseases, and a good deal of the surrounding sub stance, be destroyed by the action of these violent remedies, the case will not be benefited, but rendered ten times worse. Indeed, we may lay it down as a general maxim, that the plan of attacking tumours with stimulants and caustics is a bad one, unless it be certain that every particle of the disease can be in this manner easily and quickly destroyed, without too much local and constitutional irritation being produced.

Encysted Tumours.—In the midst of the subcutaneous cellular substance, of that which separates the muscles, or even of that which enters into the texture of different organs, tumours are observed to form, whose circumference presents a particular structure, and whose cavity is filled with usual kinds of matter. The parietes of these tumours are composed of a fragment of membrane, named a cyst, and are connected with the surrounding parts by means of the neighbouring cellular substance. This latter circumstance appears to have attracted the attention of a great many writers, who have conceived the formation of cysts, by supposing that a cavity of the cellular membrane, in consequence of disease, may have all its communications with the other cavities of the cellular membrane destroyed; that it may acquire the property of secreting matter entirely different from that which it secretes in the natural order of things; and that the accumulation of the deposed substance may produce a progressive dilatation of the small cavity. The layers of the cellular substance, in which the tumour develops itself, are afterwards supposed to undergo a kind of condensation; and by such theories, it is attempted to explain the considerable thickenings of some cysts, the extraordinary appearances of their organization, and the possibility of resolving them into cellular substance by maceration, inflammation, suppuration, &c. It is difficult, observes M. Delpech, to adopt this opinion, and reconcile it to the following observations.

1. There are some thin transparent cysts, which have been termed froze, whose inner surface is villous, and whose cavity is filled with a sero-mucous secretion, resembling synovia. In the same cavity, hairs are frequently observed, which are of different lengths, and always curved; the roots being implanted into the sides of the cyst.

2. There are other cysts, which are generally of a thin, but much more compact, texture than cellular membrane, being, as it were, almost horny and half opaque. Their inner surface is pulpy, and sometimes irregular. Their cavity

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cavity is filled with a fluid, that has more or less consistence, is pultaceous, and of a white or yellowish colour, being compared sometimes to sap, sometimes to liquid honey, and in other instances to fuel imperfectly melted. Hence, the names of *atheroma, meliteris,* and *fleatoma,* by which they are commonly distinguished. The contents of these encysted swellings have different proportions of fat; and hairs are also frequently found in the cyst, their insertions into it plainly admitting of demonstration, notwithstanding the difficulty arising from the tenacity of the contained matter.

3. We observe some cysts formed of albumen converted into a fibrous texture, and whose organization is more or less imperfect. Particular cysts of this latter kind are composed of several concentric layers, which are only slightly adherent together, and the organization of which is unequally advanced. In such a case, M. Delpech has found the external layers made up of a perfectly fibrous texture; while the vorticels of an organized structure were much less evident in the subjacent layers, and altogether wanting in those most deeply situated, which were purely albuminous. The contained matter is of an albuminous or gelatinous quality.

4. Other cysts are what Delpech calls fibro-cellular; their sides are very thick, extremely compact, and sometimes even offished in certain parts. The contents are almost like serum, occasionally tinged with blood.

5. Excepting this last sort of cyst, which is closely connected with the surrounding cellular membrane, and almost identical with it, there is, of every kind of cyst, a portion of the surface which scarcely has any adhesion to the circumjacent parts. In extirpating such tumours, if the surgeon makes a perpendicular cut through the parts, covering their external surface, he can afterwards completely detach them with the utmost facility. In short, they can be separated with a spatula, or any other blunt instrument, without any difficulty.

6. Sometimes inflammation attacks the cellular membrane around the cyst, and terminates in suppurition. One or more spontaneous openings serve at first for the discharge of the abscess; but these are at length joined together by the effect of ulceration, and the whole mortified cyst sloughs away. The same thing is occasionally seen, when caustic has been applied to the skin covering the most prominent part of the swelling. The application not only produces an eschar of the integuments, it causes also an acute inflammation of all the cellular substance around the tumour, and mortification of the whole cyst, which comes away in a mafs. Likewise, when the surgeon has been fearful of cutting out every portion of a cyst, and only opened it, or removed a part of it, with the design of completing the destruction of the rest by local applications, it has often happened that the remainder of the cyst has spontaneously sloughed away, while the surrounding cellular membrane was in a state of acute inflammation.

7. Lastly, an encysted tumour, treated in the preceding manner, has often presented phenomena resembling those of cellular substance, and admitted of being cured in the way which was described. Healthy suppuration has been established; granulations have arisen; the cavity has been gradually lessened; and a solid cicatrix has at length been formed. But it has much more frequently happened, that the cavity has not been obliterated; but become filled with painful, bleeding, fungous excrecences, which have caused an apprehension of cancer, and a necessity for no longer deferring the extirpation of the disease.

These reflections appear to M. Delpech to justify the conclusion, that encysted tumours do not proceed from an accidental or mechanical modification of the cellular membrane; but that they are so many new-formed organs, which are not cured either with the same degree or the same mode of vitality as the surrounding parts.

The causes of the formation of encysted tumours are entirely unknown: it is observed, however, that a strongly marked propensity to be afflicted with many such swellings exists in particular individuals, which is a fact that would lead one to suspect the operation of constitutional causes. For instance, it is common for those firm cysts, which contain a pappy matter, and which have received the appellations of *atheroma, meliteris,* and *fleatoma,* to be very numerous in the scalp, or other particular situations. It is well known also that the fibro-cellular cysts, usually named dropily of the ovary, are sometimes prodigiously numerous, either in one or both of these organs together. It is superfluous to remark, that external violence, to which encysted tumours have been often ascribed, has in reality no concern with the disease. Besides the evident disproportion between this species of caufe and so great an organic change, it may be observed, that if a blow can sometimes be cited, as having preceded the formation of an encysted tumour, the same cause cannot be specified in other cases, where twenty or more of these swellings originate in succession.

An encysted tumour, at its commencement, is always exceedingly small, and of a perfectly indolent nature. It is not known whether, in this early state, the cavity of the cyst already exists. The swelling usually grows with remarkable rapidity: indeed, it is often many years before it attains a considerable size. It even frequently happens, that after the tumour has become large enough to be manifest, the cyst remains stationary for years, until some irritation occurs, which renders the disease painful, and accelerates its progress. It appears that, in these circumstances, the latter enlargement of the tumour does not depend upon a briner secretion of the kind of matter originally contained in it, but rather upon suppuration of the cyst. In fact, the infide of the fac is then found to be inflamed or ulcerated, and a certain quantity of pus blended with the pappy matter, with which the swelling had no doubt been previously filled. This change, however, seldom happens, unless the tumour be, by its situation, exposed to repeated external violence.

An encysted swelling is ordinarily of a spherical shape, except when this form is altered by the disposition of the surrounding parts. The tumour is moveable in a degree proportioned to the mass of cellular substance around it; and its surface is in general smooth and regular. Sometimes, however, bands of aponeurotic fibres prefixed upon certain portions of it, as it enlarges; and thus is it rendered irregular. The same alteration may be produced by great inequality in the thickness and consistence of the sides of the cyst, or by their being weakened by internal ulceration. It is not uncommon in the beginning, and even sometimes in an advanced stage, for the swelling to have a very firm feel, either because the cyst is still of considerable thickness, and the contained matter not copious; or else because the cyst is exceedingly tense, not having yielded to the dilatation of the matter within it. In this circumstance, the swelling is not compressible; and if, at the same time, its surface should chance to be irregular and tuberculated, and especially if the disease should also be painful, the surgeon may easily make a mistake, and imagine the case to be cancer. The resemblance, indeed, is very great; and M. Delpech affures us, that he has seen practitioners of the highest merit deceived by it. But it more usually happens, that an encysted tumour presents, from the first, a soft, fluctuating,
fluctuating, doughy feel. The fluctuation is obvious enough, when the cyst is thin, and the contained matter almost all liquid. This symptom, however, is absent, when the fides of the swelling are very thick and firm, and its cavity is occupied by a pappy sort of matter; but in this last kind of cæfa, the shape of the mass may be altered by compresion, and the tumour will retain every impression made in it. If to these circumstances we add, that the tumour is everywhere soft and compressible, we have all the proper symptoms of this class of swellings; symptoms by which they may be most frequently distinguished from every other disease that has any resemblance to them.

The stationary condition of an encysted tumour may last during life, if the disease be not exposed to external violence, and it be free from every complication. But, as we have already explained, an accidental irritation may cause an inflammation, and suppuration, and ulceration, of the cyst. The consequence may also be inflammation and ulceration of the integuments. In both cases, the cyst may spontaneoufly burst, the contents escape, the cyst flough away, and the ulcer heal; or else soft, painful, fungous granulations may shoot from the inner surface of the cyst, and render cicatrisation impracticable. With regard to complications, a cancerous affection, which is sometimes joined with the organization of an encysted swelling, is the most afflicting: in this case, when ulceration occurs, the carcinomatous symptoms immediately make rapid and dangerous progres.

Encysted tumours, like aneurisms, may destroy the parts of bones, upon which they make considerable preasure. Delpech, Précis Élémentaire des Maladies Chirurgicales, tom. iii. fect. 8.

A curious appearance is sometimes the consequence of an encysted tumour being filled with a fluid resembling horn in consistency; for, when the cyst bursts, the indurated contents gradually protrude, and sometimes form an appendage very much like horn. Some years ago, we saw a complete horn removed from the cranium, by Sir J. Earle, in St. Bartholomew's Hospital. It had begun as a tumour, which, after bursting, emitted from its inside the horny excrecence. The preparation is now in Mr. Abernethy's museum.

In the British Museum is preserved a curious specimen of a horn, which grew from a woman's head, and, in all probability, was formed by a process similar to that which we have mentioned. In Mr. A. Cooper's plate it is a still more remarkable specimen, which was given to him by Dr. Roots of Kingstown, and which in shape and size bears a close resemblance to a ram's horn. It also grew from the head, and had been preceded by another horny excrecence, similarly situated and shaped, which had like wise been removed. We have subsequently been informed, that the patient, who was a gardener, had afterwards a third horn, which grew in the same identical place. In this case, we must suppose that a portion of the cyst had not been extirpated in the previous operations, and that it retained the power of secreting the horny matter. Firil Lines of Surgery, p. 142. edit. 3. See also Hornv Excrerences, in this Cyclopaedia; and Sir E. Home on the same subject, in the Philosophical Transactions.

We have already noticed the curious fact of many cysts containing hairs: we have now to mention the more surprising circumstance of teeth having been sometimes found in the cavities of encysted tumours. A remarkable example was lately published by Mr. S. Barnes, surgeon at Exeter. The cæfa was a double encysted swelling in the orbit; in the extirpation of which disease, a sharp bony process was discovered, and removed, together with the remains of the fac which adhered to it.

On examination, it was found to be in structure a tooth, and much resembling in form and size the supernumerary teeth sometimes found in the palate. The part which projected into the fac was conical, and covered by smooth, shining, white enamel; the fac firmly adherent round a contracted portion at the base of the cone, resembling the neck of a tooth; and on the outside of the fac, the appearance of a root, truncated obliquely, with a paffage in the centre, evidently containing blood-vessels. It was by this part that it was connected with the floor of the orbit. See Medico-Chirurgical Transactions, vol. iv. p. 316, et seq.

Practitioners are not acquainted with any effectual means of stopping the growth of encysted tumours; nor are the endeavours to promote the dispersion of the cyst and its contents by general or topical treatment, attended with any success. It has been alleged, that, in cases of what have been called fero-mucous cysts, the removal of these cysts and their contents might be brought about, by exciting the action of the absorbents with strong diffusive topical applications; and infusions of this mode of cure have been cited in relation to such swellings formed upon the patella, or at the extremity of the anclerosom. But Delpech remarks, that, in these cases, the nature of the disease is mistaken, because, in the situations specified, there constantly exists a synovial membrane, a bursa mucosa, forming a kind of joint between the bony prominence and the integuments. The synovia may accumulate and lodge in the cavity of the membranous fac; and if the membrane be not thoroughly diseased, as to render the absorption of the synovial fluid impossible, the natural functions of the part may be re-established, and the swelling admit of being slowly dispersed. This is what is sometimes accomplished by different local remedies, particularly those of the difcutant class. But if the synovial membrane is more completely diseased, its properties may be so altered, that the secretion from it is altogether of a different nature, and absorption is totally obstructed. This is what sometimes occurs in persons who are in the habit of kneading a great deal; in them the synovial membrane is often considerably thickened; sometimes it is partly ossified; and Delpech mentions, that he has even found loose fibrous cysts in its cavity. Here we see, that in the first instance, an immediate cure is possible, since the disease is not an organic alteration. But in the second example, which more resembles the state of encysted tumours, although it be only the change of a pre-existing organ, the affection cannot be cured without destroying the dis-tempered part. Delpech, with a view of opposing evident facts to such as are wrongly interpreted, or doubtful, adverts particularly to those fero-mucous cysts which so often form in the fibrous of the eye-lids. The apprehension of a fear upon the face, says he, constantly leads to a trial of topical resolvents, before extirpation is attempted. Surgeons know, however, that the tumours are not removed by absorption; and that, if the local applications sometimes accomplish the cure of the disease, it is by producing an irritation of the skin, which irritation extends itself to the cyst, where inflammation, suppuration, ulceration, and floughing, are the consequences. But, generally speaking, these effects are not excited, and when they are, a cure of the disease is not uniformly the result. The inflammation, carried to the requisite pitch to produce ulceration of the cyst, may only affect some points of it, and perhaps merely that portion which is next to the integuments. Every where else the inflammation may be very flight, and quite insufficient to cause ulceration and floughing of the deeper part.
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part of the cyst. Then, external ulceration taking place, the
tumour empties itself; and the part either heals up, with the
exception of a fistulous opening; or things are brought into
their original state by the formation of a perfect cicatrix, so
that the encysted tumour makes its appearance again.

Some practitioners have thought that encysted tumours
might be cured by the employment of irritating injections,
like those successfully used in the treatment of hydrocele.
The experiments which have been made with them, how-
ever, have not generally answered; and, if we reflect upon
the comparative state of things, it will appear that, in these
cases, the object aimed at would not be the same. In the ex-
ample of hydrocele, it is unnecessary to destroy the tunica
vaginalis, and the obliteration of its cavity is all that is
needed. Experience also proves, that, in consequence of a
very mild degree of inflammation, the cavity of the tunica
vaginalis is filled with lymph, which becomes organized, and
connected with the adjacent membranous surfaces. This
suffices to render all exhalation for the future impossible.
But encysted swellings have a peculiar organization, differ-
ent from that of any originally formed parts. We have no
reason for supposing, that any slight inflammation will make
them pour out coagulating lymph that is capable of becom-
ing vascular. They seem so indifferently to be thus
affected, that nothing at all resembling it happens, unless
the cause of the inflammation is kept up with considerable
permanence. The inflammation also, when it is excited,
more readily produces mortification of the cyst, than the
other kind of alteration. In fact, it is observed, that while
some portions of the inflamed cyst become covered with
fungus granulations, others mortify and separate in the
form of sloughs. The whole of a cyst has not always the
same structure, and offlided parts of it, for instance, are not
likely to admit of that process, by which a hydrocele is
usually cured. The hairs often growing in the cavity of an
encysted tumour, must generally have their attachments
destroyed by the inflammation following the use of an irri-
tating injection, and they would then probably operate as
extraneous substances.

These circumstances tend to shew, that the practice of
making an incision into the swelling must be at all events
preferable to that of employing irritating injections. By an
incision, all the contents may be dischaged, the whole
cavity of the cyst exposed, and such applications constantly
made as are calculated to keep up the requisite degree of
inflammation. This method, also, gives the surgeon an
opportunity of destroying particular portions of the cyst
with caustic, if necessary. In this way, he is sometimes
obliged to destroy the large fungi, which frequently origi-
nate from the thickest parts of the cyst, after it has been
opened and cauterized, or merely irritated by the dressings.
Too often, however, the superficial use of caustic is insuf-
ficient to leffon the size of these fungous growths, and not
adequate even to retrain their daily increase; while deep
cauterizations produce acute long-continued pain, fever, los-
of rest, and great irritation of the whole extent of the dif-
case. The train of symptoms, indeed, which the repeated
free use of caustic may occasion, must seem still more alarm-
ing, when it is recollected that the cyst of the tumour some-
times becomes the seat of cancer; and that all the ravages of
the latter disease in the ulcerated state may be the con-
sequence. In this circumstance, the practitioner is obliged to
have recourse to the extirpation of the swelling, and this
sometimes a long while after the cyst has been opened, and not
before the patient has suffered a long series of other painful,
unavailing measures. Nor can these dangerous effects be
avoided by opening the tumour with caustic instead of with

a cutting instrument. The more certain inflammation of the
cyst thus aimed at, is by no means sure of ensuing; and it
will never follow, unless the caustic act strongly on the cyst.

Besides, the action of caustic is too variable to justify the
calculation, that its effects will reach to a precise depth, and
always effectually destroy the cyst. See Delpech, Précis
Elémentaire des Maladies Chir. tom. iii.

The inconveniences of opening an encysted tumour ought
to make us give a decided preference to extirpating or am-
pulating the whole of the swelling, whatever may be the
nature of the cyst. Indeed, this method of treatment is
superior to all others. The art of doing the operation skil-
fully, consists in detaching the tumour from the surrounding
parts without wounding the cyst. If the latter accident oc-
cur, the contents frequently flow out, the cyst collapses, and
the continuance of the dilatation is attended with more dif-
culty. It is a great point to remove every particle of the

cyst; and hence it is satisfactory to take it out entire, that
is, without wounding it. When any portion remains be-
hind, the wound will frequently not heal, in consequence of
fungous granulations arising from the diseased part. Unles-

The swelling be large, a single incision through the skin is
sufficient; but in other instances, it is advantageous to
make two semicircular cuts in this manner, \( \text{\ldots} \); first, be-
cause it facilitates the removal of the tumour; and secondly,
because it prevents a redundancy of skin, which would take
place if none were removed, and which would have the ef-
fect of seriously retarding the cicatrization of the wound.

After the operation, the edges of the wound are to be
brought together with sticking-plaster, and a compress and
bandage applied.

The excision of encysted tumours, superficially situated,
is most very easy, as the cyst is only slightly connected
with the surrounding cellular membrane. But there may
be more difficulty when the swellings have been in a previous
state of inflammation; when they are very large, or when a
portion of the cyst is deeply situated, or closely adherent
to other parts. First Lines of Surgery, p. 144, edit. 3.

We must not quit the subject of encysted tumours, with-
out making a few remarks on those of the scalp.

The encysted tumours met with in this part, are situated
between the integuments and the aponeurosis of the occi-
dito-frontalis muscle. Their cysts are most of a hard,
hornyness consistence, and filled with a pulpyaceous matter,
being what are termed cases of atheroma. It is very common
for such swellings to grow in great numbers. The intimate
union between the aponeurosis and the skin causes the latter
to be considerably stretched by the growth of tumours un-
derneath it; but notwithstanding this effect, and that the
integuments are also sometimes rendered very thin from the
same cause, they are seldom altered in appearance, excepting
occasionally their exhibiting a livid colour, which is a sign of
their being about to ulcerate. When encysted tumours of
the scalp have slowly attained an immense size, the skin
covering them is diffused in such a degree, that it is either
quite bald, or at most only has a very few hairs upon it, so
widely separated are the bulbs. It rarely happens that the
preature of the swelling produces an abscess of the part
of the skull underneath the diseased; but examples of this
kind have sometimes been observed.

Encysted tumours on the top of the head, even when they
have acquired a considerable size, may be easily concealed
by a hat, cap, or the head-drefs; and, unless in a painful,
inflamed, or ulcerated state, cause but little inconvenience.

But when they are situated at the sides of the cranium, they
render the wearing of hats, or any kind of head-dress, less
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ficultations for these swellings. But their occurrence is so frequent, that there are few surgeons who have not had many opportunities of seeing them in almost every region of the body. We once saw an adipose tumour which grew on the thigh, and after it had been removed by Mr. Cline, in St. Thomas's hospital, was found to weigh between fourteen and fifteen pounds. Sometimes adipose tumours are formed in parts where there is naturally but a small quantity of fat: thus Delpecch has seen a fatty swelling formed in the labia pudendii, the structure of which is very different from fat. Sometimes adipose swellings are formed between the peritoneum and the parietes of the abdomen, in which circumstances the tumours make their way outwards under the integuments, drawing along with them the part of the peritoneum to which they are attached. Such cases have been improperly named by the French surgeons "hernies graisseuses."

The causes of the growth of adipose tumours are not known: the disease has been sometimes ascribed to blows, and other kinds of external violence; but we agree with M. Delpecch in believing, that this doctrine is altogether incorrect and unfounded.

The shape and slow growth of adipose tumours might suffice to indicate their nature; but they present other characters, amongst which the confidence of the mass of the swelling deferves particular notice. These tumours are not elastic, but of a peculiar soft feel, resembling what is perceived on handling a bag filled with cotton. Their surface is unequal, but the irregularities which are distinguishable through the thin integuments have no firmness, and are obliterated by compression. These circumstances, however, are only strongly marked in those adipose tumours as have not yet acquired an immense size, and which remain free from every complication. When the swelling has become exceedingly large, its weight, its magnitude, its pressure on the surrounding vessels and integuments, materially obstruct the circulation; and an oedema then takes place between the skin and adipose substance, the confidence of the latter part may appear to be increased. A manual examination, however, made by a surgeon of experience, will still detect the kind of softness which is peculiar to all fatty tumours, and discriminate it from the firmer feel of the cellular membrane immediately under the skin. Any previous attacks of inflammation may produce the same effect, and this even in a more remarkable degree. Such attacks are very common in those adipose swellings whose situation particularly exposes them to frequent causes of irritation. Thus, M. Delpecch once saw a large lipoma growing in one of the labia pudendii, the incessant motion of which swelling, together with the friction of the thighs against it, and the irritation of the urine, had frequently made the skin inflame, and caused deep ulcerations in the sides of the tumour. The swelling was heavy and indurated; the irregularities of its surface were much firmer than usual; but in handling the mass attentively, the peculiar confidence of lipoma could be distinguished in the deeper part of the tumour, and be discriminated from the hardness of the integuments and cellular substance. Such induration is accidental; it seldom affects the whole of an adipose tumour; when it occurs, it is always confined to the layers of cellular membrane in which the adipose substance is lodged; it originates from repeated external irritation; and it should always be well discriminated from the hardness arising from a cancerous disease.

Adipose tumours, for the most part, grow in a regular, slow, and progressive manner; and their vessels are generally neither large nor numerous. Hence the removal of these swellings is attended with little danger of any serious degree
of hemorrhage, and they are very easily separated from the surrounding parts. The detachment of the tumour, however, may be more difficult when there have been previous attacks of inflammation in the part. An adipose tumour, even when large, may continue for many years without producing any material inconvenience, provided no complication attend the disease. The swelling may grow with more or less rapidity, or remain stationary; but it has never been observed to disappear spontaneously; and every means which has been hitherto tried with a view of dispersing it, has proved ineffectual. The only method of cure consists in cutting away every part of such a swelling, which ought to be done before the diseased mass is of very large size.

Of some other Kinds of Sarcomatous Tumours.—It is extremely difficult to name and describe, clearly and unobjectionably, all the different varieties of sarcoma. Mr. Abernethy has proposed naming them according to their anatomical structure, or their supposed resemblance in texture to particular organs. Thus he adopts the terms common vascular, or organized sarcoma; adipose sarcoma, which we have already described; pancreatic sarcoma; cystic sarcoma; mafloid or mammary sarcoma; tuberculated sarcoma; medullary sarcoma, &c.

Under the title of common vascular, or organized sarcoma, Mr. Abernethy comprehends all tumours which appear to be composed of the gelatinous part of the blood, rendered more or less vascular by the growth of vessels through it, without having any distinguishing peculiarity of structure. Mr. Abernethy conceives that this kind of organization in tumours is the most simple, and, perhaps, may always precede other descriptions of structure. Vascular sarcoma not only makes its appearance as a tumour, which is altogether extraneous in regard to the original conformation of the body, it also enlarges natural parts, especially the testis, mamma, and absorvent glands.

When this sort of swelling has attained a considerable size, the superficial veins become quite varicose. If left to itself, the tumour generally grows till the skin is so distended, that it ulcerates and exposes the new-formed substance, which floughs and falls out.

In this manner the disease might be got rid of; but such are the constitutionally irritating attending it, and the fever and frightful appearance of the part, that the surgeon generally waits no longer, but removes the whole mass of the diseased with his knife.

Pancreatic sarcoma is the name which Mr. Abernethy applies to those fleshly tumours which resemble the pancreas in structure. The substance of which they consist is composed of irregularly-shaped mafses, connected together by a fibrinous kind of texture. This species of sarcoma is sometimes formed distinctly in the cellular substance; but most commonly occurs in the female breast, perhaps originating in the lymphatic glands. The tumour increases slowly, and generally has little tendency to inflame and suppurate. The morbid structure in question frequently takes place in the breast, a little above, and on that side of the nipple which is next to the arm. In general the disease is chronic, and does not involve the neighbouring absorvent glands. But, in a few instances, this species of sarcoma, when situated in the breast, deviates from its ordinary indolent nature, and occasions severe, lancinating pain, an inflammatory state of the integuments, and an adhesion of them to the tumour, the axillary glands also becoming enlarged. Pancreatic sarcoma is sometimes so irritable a disease, that Mr. Abernethy thinks it may frequently be considered as bad as cancer. When the glands in the axilla become affected, one generally first swells, and is extremely tender and painful; afterwards the pain abates, and it remains indurated; another then becomes affected, and runs through the same course.

Those farcomatous tumours which contain cysts or cells, Mr. Abernethy distinguishes by the term cystic. The disease sometimes occurs as a distinct swelling; but it is more commonly observed in the testicle and ovary. The cysts are very vascular, so that they admit of being made quite red with an anatomical injection. They generally contain a ferial fluid; but sometimes a caseous substance. Mr. Abernethy believes that this species of sarcoma is peculiarly intractable when situated in the testicle.

The mafloid or mammary sarcoma is so named from its resemblance to the mammary gland in structure. Mr. Abernethy has not frequently seen this kind of tumour, and his attention was called to the nature of the disease by a case, in which a swelling, partaking of the above structure, and about as large as an orange, was removed from the front of the thigh. The wound seemed at first dispersed to heal; but it afterwards degenerated into a malignant ulcer, which in about two months proved fatal. As this sort of tumour is gradually lost in the surrounding parts, which probably remain a disposition to assume a similar morbid alteration, Mr. Abernethy very judiciously recommends a more extensive removal of them than was practised in the foregoing example.

Tuberculated sarcoma is the name proposed by Mr. Abernethy for those fleshly swellings which consist of an aggregation of small, roundish tumours, of various sizes and colours, connected together by a kind of cellular substance. This gentleman has principally seen the disease in the lymphatic glands of the neck. The tumours ulcerated, became painful, and ultimately destroyed the patients. Mr. Abernethy regards the tuberculated sarcoma as an incurable and fatal disease; though, fortunately, its occurrence is unfrequent.

Medullary sarcoma is the term applied by Mr. Abernethy to a malignant and dangerous kind of tumour, which resembles in its structure and appearance the medullary substance of the brain. It is often seized affecting the teftis, and has been termed the softest of that part. Many surgeons consider this affection and the fungus hematodes as the same; we do not therefore deem it necessary to offer here any remarks in addition to those already delivered on the latter disease in another article. See Fungus.

Treatment of Tumours.—Surgeons not only remain ignorant of those particular causes which produce the commencement of the growth of the various descriptions of fatty, fleshly, indolent tumours; they also know no effectual means by which the progress of the disease can be checked, and the patient freed from the inconveniences of continually bearing about with him a mass of redundant matter, which, in a chronic state, is both a deformity and an oppression; and in an inflamed or ulcerated state, is a source of severe pain, and even of fatal mischief. It has been conjectured that topical bleaching and cold applications would check the growth of indolent tumours; but experience teaches us to place no dependence upon the plan. Mercurial frictions, electricity, blisters, and local stimulants, have also been repeatedly tried, with a view of exciting the action of the absorvent glands, and dispersing the swelling. These methods, however, are not recommended by many examples of success; and they are attended with some risk of irritating the tumour, without lessening it, in which case the disease sometimes changes from an indolent quiet form to an irritable state, in which it inflames, enlarges, ulcerates, emits fungi, and assumes a character as dangerous and intractable as that of cancer itself. Whenever a swelling is suspected of being either a mammary, tuber-
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Of the Operation of removing a diseased Breast, and Tumours in general.—The operation of cutting away a diseased breast, is done nearly in the same manner as the removal of tumours in general, and is indicated whenever the part is affected with an incurable disease, which admits, however, of being entirely removed with the knife. When the breast is affected with growths, ulcerated, or medullary sarcoma, it is particularly necessary to abstain from doing any thing which may irritate the part.

The surgeon, indeed, would be inexcusable, were he to neglect to take away such portion of the integuments covering the growths, as is evidently affected, appearing to be fo discoloured, pucked, and closely attached to the diseased lump beneath. No surgical instrument is ever left behind. There is no doubt that there is no absence of operations for cancers with different, so much as the neglect to make a free removal of the skin and parts surrounding every slide of the tumour. Hence the diseased has frequently appeared to recur, when, in fact, it had never been thoroughly extirpated; the diseased, though entirely a local affection, has been deemed a constitutional one; and the operation frequently rejected as ineffectual and useless.

But, strongly as we have urged the prudence, the necessity of making a free removal of the skin covering, and of the parts surrounding every cancerous or malignant tumour, the cure can only be regarded as unscientific, in most operations for the removal of simple, fatty, or spongy tumours. However, even in the latter cases, when the swelling is very large, it is better to take away a portion of skin; for otherwise, after the excision of the tumour, there would be a redundancy of integuments, the cavity of which would only serve for the lodgment of matter. The loose superficial skin, also, would lie in folds, and not apply itself evenly to the parts beneath, so as to unite favourably by the first intention; nor could the line of cicatrices itself be arranged with such nice evenness as it might be, were a part of the redundant skin taken away at the time of operating.

The best method of removing a diseased breast is as follows: The patient is usually placed in a sitting posture, well supported by pillows and cushions, but the operator would find it equally convenient, if not more so, to remove the tumour with his patient in a recumbent position; and it certainly is better whenever the operation is likely to be long, or much blood to be lost, which circumstances are very apt to bring on fainting. We remember that Mr. Abernethy, in his lectures, used to recommend the latter plan; which, however, without the sanction of any great name, or authority, possesses such obvious advantages, as will always entitle it to approbation.

The arms should be confined back, by placing a flick between them and the body, by which means the fibres of the great pectoral muscle will be kept on the stretch, a state most favourable for the dissection of the tumour off its surface. The flick also prevents the patient from moving her arm about, and interrupting the progress of the operation.

When the tumour is not large, and only a simple sarcoma, free from malignancy, it will be quite unnecessary to remove any of the skin, and of course this need only be divided by one incision, of a length proportionate to the tumour. The cut must be made with a common dissecting knife; and, as the division of the parts is chiefly accomplished with the help of the edge towards the point, the instrument will be found to do its office best when the extremity of the edge is made of a convex shape, and this part of the blade is turned a little back, in the way in which dissecting knives are now often constructed. The direction of the incision through the skin should be made according to the greatest diameter of the tumour to be removed, by which means it will be most easily dissected out.
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The direction of the incision is various with different practitioners; some making it perpendicular, others transverse. In general, the shape of the tumour must determine which is the best. In France, it has been said, that when the incision follows the second direction, it heals more expeditiously, because the skin is more extensible from above downward, than laterally, particularly towards the sternum, and consequently allows the sides of the wound the more readily to be placed in contact; and that the action of the pectoral muscles tend to separate the edges of the wound when it is perpendicular. On the other hand, it is allowed that the wound, made in the latter manner, is the most favourable for the escape of the discharge, if suppuration should occur. See Defaut par Bichat, tom. ii. p. 312.

The cut through the skin should always be somewhat longer than the tumour; and as it is, perhaps, the most painful part of the operation, and one attended with no danger whatever, it should be executed with the utmost celerity. Pain is certainly more or less to be dreaded, according to its duration. The fear, however, of giving pain, has probably led many operators to err, by not making their first incision through the integuments large enough, the consequence of which has often been, that there was not room enough to get at the tumour to as to dissect it out with facility: the patient has been kept nearly an hour in the operating room, instead of five minutes, and the surgeon confounded by the spectators as awkward and tedious. It is clear, also, that, besides the great deal more blood lost from this error than would otherwise happen, the vessels being commonly not tied till the cut is finished, the avoidance of pain, that fear which led to the blunder, is not effected, and the patient suffers much more, and for a much longer time, in consequence of the embarrassment and obstacles in the way of the whole operation.

When the disease is of a fibrous or malignant nature, the skin covering the tumour should at all events be in part removed. All that portion which is discoloured, puckered, tuberculated, or otherwise altered, should be taken away. Some must also be removed, in order to prevent a redundance, in all cases in which the tumour is large. We have said too, that in cases of fibrous and cancer of the breast, the nipple is considered a dangerous part to be left behind. For the purpose of removing the necessary portion of skin, the surgeon must obviously pursue a different mode from that above described; and instead of one straight incision, he is to make two circular ones, one immediately after the other, and which are to meet at their extremities. The size of these wounds must be determined by that of the disfigure to be removed, and by the quantity of skin which it is deemed prudent to take away; for the part which is included in the two circular cuts, is that which is not to be separated from the upper surface of the swelling, but taken away with it. The shape of the two cuts together may approach that either of a circle or oval, as the figure of the tumour itself may indicate as most convenient. The direction of the incisions is to be regulated by the same consideration.

In the above ways, the first division of the integuments is to be made in removing tumours of every description covered with skin. The same principles and practice should prevail in all these operations; and, whether the swelling is the mamma, or any other disfigured mass, whether situated on the chest, the back, the head, or extremities, the same considerations should always guide the operator’s hand.

The incision or incisions in the skin having been made, the next object is to detach every side of the tumour from its connections, and the separation of its base will then be the last and only thing remaining to be done. When the tumour is a fibrous, or other malignant disease, the operator must not dissect close to the swelling, but make his incisions on each side, at a prudent distance from it, so as to be sure to remove with the disfigured mass, every atom of morbid mischief in its vicinity. But when the tumour is only a mere fatty or other masses, perfectly free from malignancy, the cellular bands and vessels forming its connections may be divided close to its circumference. It is astonishing with what ease fatty tumours are removed, after the necessary division is made in the skin; they may almost be turned out with the fingers, without any cutting at all. When they have been inflamed, however, they are then more adherent to the surrounding parts.

Thus we see, that the first stage of the operation of removing a tumour, is the division of the skin; the second, the separation of the swelling from the surrounding parts on every side; the third and last stage is the division of the parts to which its under surface, or base, is attached. The latter object should be accomplished by cutting regularly from above downward, till every part is divided.

It is a common thing to see many operators constantly embarrassed and confused, whenever they have to remove a large tumour, on account of their having no particular method in their proceedings. They first cut a few fibres on one side, then on another; and turning the mass of disease now to this side, now to that, without any fixed design, they both prolong the operation very tediously, and prevent the bystanders a complete specimen of surgical awkwardness. On the contrary, when the practitioner divides the cutting part of the operation into the three methodical stages above recommended, in each of which there is a distinct object to be fulfilled, he proceeds with a confidence of knowing what he is about, and soon effects what is to be done, with equal expedition and adroitness.

Having taken out the tumour, the operator is immediately to tie such large vessels as may be pouring out their blood; indeed, when the removal of the swelling will necessarily occupy more than three or four minutes, it is better to tie all the large arteries as soon as they are divided, and then proceed with their division. This was the celebrated Defaut’s plan, and it is highly deserving of imitation in this country, not only because many subjects cannot afford to lose much blood, but also because the profound effusion of this fluid keeps the operator from seeing what parts he is dividing.

The largest arteries being tied, the surgeon should not be immediately solicitous about tying every bleeding point which may be observed. Instead of this, let him employ a little time in examining every part of the surface of the wound, in order to ascertain that no portion of the swelling, no hardened lump, nor disfigured fibres remain behind. Even if any part of the surface of the pectoral muscle should present a morbid feel or appearance, it must, on every account, be cut away. Also, if any of the axillary glands are disfigured, the operator should now proceed to remove them. After the time spent in such measures, many of the small vessels, which bled just after the excision of the swelling, will now have stopped, the necessity for several ligatures will be done away, and of course the patient saved a great deal of pain, and more of the wound be likely to heal by the first intention.

Some information may be derived, respecting whether any of the tumour is left behind, by examining its surfaces, when taken out, and observing whether any part of them is cut off; for if it is, it may always be found in the corresponding part of the wound.

The
The axillary glands may always be taken out, without the least risk, if the plan pursued by Default in France, and Sir Charles Blicke, and other eminent surgeons in this country, be adopted. The method alluded to is, after dividing the skin covering the gland, and freeing the indurated part from its lateral connections, to tie its root, or base, with which it is connected, with the parts on the side towards the cavity of the axilla. Then the indurated gland itself may be safely cut off just above the ligature. Were the gland cut off in the first instance, the artery which supplies it with blood would be exceedingly difficult to tie, on account of its deep situation; and, by reason of its shortness and vicinity to the heart, it would bleed almost like a wound of the thoracic artery itself. In this way, there is also not the least hazard of injuring the latter vessel. It would be a great improvement in the mode of operating for the removal of these glands, if surgeons were always to make the patient lie down, with the arm placed in such a position as would let the light fall into the axilla. How much the steps of the operation would be facilitated in this way, we need not attempt to explain.

The above directions will enable a surgeon to remove tumours in general. They apply also in a great measure to encysted tumours; but in the latter cases, particular care must be taken not to wound the cyst, as it then collapses, and the dissection of it out is much more difficult. One half of each ligature is always to be cut off before drying the wound. The edges of the incision are to be brought together with strips of adhesive plaster; and, before this can be done with ease, the prick confining the arm back must be removed, and the os brachii brought forward, so as to relax the pectoral muscle and integuments of the breast. No future should ever be employed, as they are useless, painful, and irritating. The wound being closed with sticking plaster, and a pledget of simple cerate, a compress of folded linen, or flannel, may be put over the dressings; these are to be secured with a broad piece of linen, which is to encircle the chief, be fastened with pins or flitches, and kept from slipping down by two tapes, one of which is to go from behind forward, over each shoulder, and be flitted to the upper part of the bandage both in front and behind. The arm on the same side as that on which the operation has been done, should be kept at rest in a sling; every motion of the limb must evidently disturb the wound by putting the great pectoral muscle into action, or rendering its fibres sometimes tenes, sometimes relaxed.

In the article Surgery, we have adverted to the plan of cutting off both ends of the ligatures applied to the arteries, with a view of lessening the quantity of extraneous substance in the wound, and rendering union by the first intension more probable. This method has been tried by Mr. Lawrence after operations on the breast, and also by M. Roux and professor Delphech in France, who all make favourable reports of the practice.

The removal of tumours from the neck is frequently an operation of delicacy and difficulty, especially when the exact attachments and depth of the swellings are not precisely known. The many large arteries in this part of the body, and its being the situation of the carotid artery, and internal jugular vein, are considerations which ought to deter every surgeon who is not an anatomist, from venturing to cut away swellings from the neck, particularly such as have bales extending more or less deeply, and not very moveable. Unfortunately for the man who is deficient in anatomical knowledge, the neck is as common a situation for tumours requiring the ufe of the knife, as any part which can be specified.

One of the boldest operations, for the removal of a tumour from the neck, was that lately performed by Mr. William Goodlad, surgeon at Bury, in Lancashire, and recorded in the seventh volume of the Medico-Chirurgical Transactions, p. 112. In order to do away the danger of hemorrhage from arteries, this gentleman began with tying the trunk of the carotid artery; some conception of the nature of the whole proceeding may be formed from the view which the wound presented after the entire swelling had been removed. "The whole fibrous-mafloid muscle was exposed, and its fibres dissected clean, except about half an inch from its insertion into the clavicle. The wound extended backwards from behind the mafloid procefs to the trachea anteriorly, but became narrowed in the direction of the muscle at the lower part of the neck. The sub-maxillary gland was exposed, and about one-fifth of its substance, not appearing healthy, was removed. The digastric and the greater part of the mylo-hyoidus were exposed, the ramus of the jaw was only covered by perioleum, except where covered by the mafleter muscle, part of which, not appearing healthy, was dissected away. The whole of the condyloid process of that bone was laid bare in the same manner, and behind it the pterygoid muscles were also exposed. The membrane of the cheek was only covered by a cellular substance, which did not appear healthy; but sufficient skin was favored to cover the zygoma. The parotid gland was entirely removed.''

This, which is one of the boldest operations on record, proved successful, the wound having completely healed in ten weeks, and no recurrence of the tumour having followed. See Abernethy's Classification of Tumours. Delphech Précis Élémentaire des Maladies réputées Chirurgicales, tom. iii. Cooper's Dictionary of Practical Surgery. Medico-Chirurgical Tranls. vol. vii. pt. 1, &c.

TUMOUR, among Animals, is a preternatural swelling or enlargement in any part, arising either from an external injury, or an internal cause. Tumours in them are of several different kinds, according to the nature of the causes.

Where tumours or swellings are caused by external accidents, such as blows, bruises, and other such means, they should at first be treated with restringent applications; such as having the parts bathed frequently with warm vinegar or verjuice; and where they will admit of bandage, a flannel wetted with the same should be rolled or laid on, and fastened by it. When by this method the tumour or swelling does not give way and subside, a poultice made with red-wine lees, strong-beer grounds, and oatmeal, or with vinegar, oil, and oatmeal, should be applied, Especially when on the legs; either of which applications may be used and continued twice a day after bathing the parts in the above manner, until the swelling abates; when, in order to wholly disperse them, the vinegar should be changed for camphorated spirits of wine; to four ounces of which, one of spirit of ful ammoniac may be added; or they may be bathed with a mixture of two ounces of crude ful ammoniac boiled in a quart of chamber-ley, twice a day, and cloths dipped in the same be put on them. Fomentations, too, made by boiling wormwood, bay-leaves, and rosemary, with a proper quantity of spirits, are not unfrequently of use in a high degree.

However, in bruises where there may be extravasated blood, which is not taken up or dispersed by these means, the shortest and most convenient way is to open the skin, and to let out the grumous blood.

The critical tumours or swellings in horses or other animals, which terminate fevers, or other difeases, should by no means be dispersed, except when in the horse, they fall upo-
upon the pattern or coffin-joist, so as to endanger them; in which cases the discontinue fomentation may be applied three or four times a day, and a cloth or flannel frequently wrung out of the same may be bound on the parts.

But when the swellings fix themselves under the jaws, behind the ears, on the poll, the withers, or in the groin, shieth, or other parts of the horse, or any other animal, they should be encouraged and brought forward by ripeening poultices, wherever they can be applied: oatmeal boiled soft with milk, to which a proper quantity of oil and lard is added, may answer this purpose; or the poultice composed of linseed-meal, as used in other cases: these should be applied twice a day, until the matter is perceived to fluctuate, by the feel, under the finger, when it should be let out; for which purpose a knife or strong lancet should be used, making an opening the whole length of the tumour, where it can be safely done, as nothing contributes so much to a kind healing of the parts, as the matter having a free discharge, and the opening being sufficiently large to dresst it to the very bottom.

After this, pledges of lint or tow, spread thinly with black or yellow balsam, or the wound ointment, and dipped in the same, melted down with a fifth part of oil of turpentine, should be laid to the bottom of the fore, and the whole filled up in a very light manner with the same, without any sort of ruffling. It may be dressed in this way once or twice a day, if the discharge be great, until a proper digitation be brought on, when it should be changed for pledges spread with the ointment with red precipitante, used in the same manner. If the fore should not digest kindly, but look pale, and discharge a thin watery fluid, it should be fomented as often as it is dressed with the above fomentation, and the strong beer poultice be applied over the dressing, continuing the same until the matter grows thick, and the fore has a florid appearance.

There are other indolent tumours sometimes occurring in animals, but which are noticed under their proper heads.

Tumours, Moor, in Agriculture, a term applied to the small hilly spots or swells of boggy plots which are formed on the banks of hanging slopes, or diffused over flatter surfaces, in particular cafes and situations. They may be formed in various ways, as, in the manner of quickfords, by the waters which fall in their immediate vicinities, but which, to produce certain defects of the wet kind in the lands, find a receptacle sufficient to give the affected tumours parts a constant supply of moisture, or what is enough for giving the bog plants that take root upon them strength and support. Thus, such rising grounds as are formed of open, porous, or freely conducting materials, having the lower borders of them imperfectly covered with an impermeable soil, are peculiarly liable to be affected with this sort of tumour defect. They are likewise capable of being caused by mists of impenetrable matters, which are lodged on the sides of the declivities, or at the feet of them; also by internal wetness, descending through the kind in partial channels that lead it to the surface; and by the fame sort of wetness when confined beneath an impermeable soil, but which is defective, and by reason of the weight thereof above it, admits of the confined moister rising through veins of the sandy kind, or other conducting substanfes and passages to the surface where these sorts of tumours are produced.

Wherever lands are troubled with these kinds of tumours, which is not unfrequently the case, they are to be removed by drawing away the wetness in proper methods, and the suitable manuring, flocking, and managing of the ground, by which means they may often be converted into good sound land. See Moor and Waste-Land.
At the pipes regular and 10 fold £343, £a alfo Livonia, is Paris ankers, A a Spanifti viz. loaden 25 tonnes Englifti ancertain arrobas, answering gens noftels. this Copenhagen 224 tonnes, pipe 2 of Elfmeur, Brunfwick, of Liftjon, of A fafs only gallons: tun corn mingels. At last, of Englifti of bon wine that of 80 herrings; a laft of herrings, Luneburgh salt, honey, pitch, tar, ahes, &c. contains 12 tonnes or barrels; and a laft of French, Scotch, or Spanish salt, when lying together, contains 18 tonnes, and when in sepa-
rate tonnes, only 16.

At Elifieur, in Deamark, the tonneau of French wine is reckoned for 4 hogheads, or 24 ankers; the pipe of Spanifti and Portugal wine for 2 hogheads, or 12 ankers; 30 Spanifti arrobas, or 25 Portuguese almdus of wine, for 1 regular pipe; the pipe of French brandy for 6 ankers; the poinçon ditto for 9 ankers; the tierçon ditto for 4 ankers.

At Embden, corn is fold in tonnes of 4 verps, 8 fcheffels, or 144 kruefen; 15 tonnes, or 60 verps, make 1 laft, anfwer-
ing to 10 English quarters.

In France, by the old fytum, a tonneau of Orleans contains 2 muids of Paris, the mud of wine at Paris being = 174 English gallons; a tonneau of Bourdeaux = 4 barriques, each of 216 pintes of Paris, or 53 3/4 English gallons.

In moft parts of Germany, a laft of lime, tar, pitch, train oil, butter, &c. is 12 tonnes or casks; a laft of herrings is 12 tonnes, each tonne containing about 850. See Tonneau.

At Hamburgh, a tonne of butter, small measure, is 224 lbs.; ditto, great measure, 280 lbs.; a pipe of oil is 820 lbs.; and a small tone of green soap is 60 lbs.: a tone of beer contains 48 flubgens; a small ditto, 32 flubgen; a quartel of train oil contains 2 tonnes or 64 flubgen, and is reckoned at 224 lbs. net weight.

In Hanover, a tone or barrel of honey contains 256 flubgens, and weighs 300 lbs.

In Holstein, the meafure for corn is the fame as that of Copenhagen: viz. the tone of 8 fcheffels, or 32 verps, 100 of which tonnes yield about 49 English quarters. A tone of beer contains 128 quarters, or 25 English beer-gallons.

For the value of the tonne at Königberg in Pruffia, see Tonneau.

At Libon, 13 3/4 quintals make a tun; and each quintal contains 4 arrobas; the arroba 32 lbs., the pound of Libon weighing 70842 grains English Troy weight; so that 83 lbs. of Libon are equal to 84 lbs. of avoidupois weight. The standard gauge, at the Collum-house of London, of a pipe of Libon, is (as above-mentioned) 140 gallons, and this pipe is reckoned at 31 almdus, and the almdus at 4 1/2 English gallons nearly.

At Nantes, in France, a tonneau of wine contains 2 pipes; a pipe, 2 barriques or hogheads, or 240 pots; the pot containing 2 Paris pinte, and the barrique containing 596 English gallons, and a poinçon of wine about 54 1/2 ditto.

At Narva, in Livonia, a laft of corn contains 24 tonnes, and a tone 4 verps, or 32 kapps: 26 tonnes of Narva = 15 English quarters nearly: the laft of French and Spanish salt is reckoned at 18 tonnes, each of 34 kapps. The ahm of wine contains 4 ankers, and a pipe of Spanish wine is reckoned at 10 ankers; of Alicant and Portuguese wine at 13 ankers, Hamburgh meafure: a fass of beer or brandy contains 128 foles, and 44 foles answer to about 15 English gallons.

At Oporto, the ton is = 2 pipes = 50 almdus = 2 potes = 12 canadas = 24 quartillos = 8 meios. At Libon, both wine and oil are fold by the pipe of 26 almdus; but the pipe of Libon wine lent to England contains about 31 almdus, and its standard gauge is 140 gallons: and therefore the Libon almdus is reckoned at 4 1/2 English gallons. At Oporto, the pipe is divided into 21 almdus, but this almdu and its subdivisions are 49 1/4 per cent. greater than those of Libon. Thus the standard gauge of a pipe of port, at the Cutfom-house of London, is 138 gallons, which gives the almdu of Oporto equal to 6 English gallons and 5 pints nearly. Ships are measured by the ton, being a cylinder 6 feet high and 3 3/4 feet in diameter, which gives the contents 573 cubic feet nearly. The proportion between the almdue of Libon and that of Oporto is variously given by different authors; some make it 30 per cent., others 25, and others from 25 to 40; but the real proportion, says Dr. Kelly, is 49 1/4 per cent.; but in the common course of buineses, 2 almdus of Oporto are reckoned equal to 3 of Libon.

At Pernau, in Livonia, a laft of corn contains 24 tonnes, the laft containing about 863 Winehefter buhles, or 16 lafts = 173 English quarters. But a laft of linseed is reckoned at 12 tonnes, and a laft of salt at 18 tonnes.

At Revel, in Livonia, a laft of corn contains 24 tonnes, and a tone of salt is 4 lofs: 19 tonnes of corn in Revel are = 8 English quarters.

At Riga, a laft of rye contains 22 3/4 tonnes; a laft of wheat or barley, 24 tonnes; a laft of oats, malt, or peafe, 30 tonnes: 24 tonnes being = 48 lofs, and 56 lofs of Riga = 13 English quarters.

At Straulfund, a laft of corn contains 8 dromts = 32 tonnes = 96 fcheffels: 46 fcheffels contain 51 English buhles nearly, or 46 dromts = 76 1/2 English quarters. Kelly's Univ. Cambi. passim.

The great ton or Rhenifh wine-veffel of Heidelberg, made in 1343, contained 672 urnez, of 4 1/4 English gallons each; being in all 2690 English gallons, or about 42 hog-
hheads, or 21 pipes of wine.

Tun is also a certain weight, by which the burden of shps, &c. is effimated.

The tea tun is computed to weigh 2000 lbs., or 20 quins-
tals or hundred weight (amounting to 2440 lbs. avoidupois); so that when we say a vefsel carries 200 tons, we mean it is able to carry 200 times the weight of 2000 lbs., i.e. 400,000 lbs.: it being found by a curious obfervation, that the tea-water, whole room the vefsel fills when full laden, weighs fo much.

To find the burden and capacity of a shp, they measure the hole or place where the load is to be; allowing 42 cubic feet to the tea tun. See Burren, and Tonnage under Shp-building.

The price of freight, or carriage of merchandizes, is ordinarily settled on the foot of the tea tun: and yet, though the tun is regularly 20 cwt., there is some difference made in it, either on account of the cumbermenefes or bulk of the commodities, the space they take up, or the like. See Freight.

Accordingly, at Bourdeaux, 4 barriques of wine, and also
of vinegar, honey, and turpentine, are held a tun; 5 of brandy, 3 of syrup, 20 bushels of chestnuts, and the like of corn, beans, linseed, walnuts, &c.; 5 bales (each of 100 lbs.) of cork, 5 bales (each of 100 lbs.) of feathers and skins, and 8 of paper; 10 cubic feet of marble, 20 quintals of iron in bars, or lead in pigs, 3 bales of hemp (each of 300 lbs.), 20 quintals, or 150 rolls of tobacco.

At Stettin, the freight of ships is generally valued by the Dutch ship laft, 5 of which are equal to 4 lafts of Stettin; and 4000 lbs. of iron, and other heavy goods, 2000 lbs. of lighter goods, such as hemp and flax, 568 sheffes of corn, 13 casks of herrings, 8 hogheads of wine, 5 sheffes (each of 60 pieces) of pipe-flaftes, 7 sheffes of hoghead-flaftes, 9 sheffes of barrel-flaftes, 65 cubic feet of oak-temper, or 70 cubic feet of fir-temper, are reckoned for a Dutch laft.

A tun or load of timber is forty solid feet, if the timber be round; if it be hewed or square, fifty-four.

Tuns, in Natural History, a family of univalves. See SHELLS and CONCHOLOGY.

Tun, Ten, in the ends of words or names of places, signifies a town, village, or dwelling-place: from the Saxons, tun, fetes, vaflum, villa, vicus, oppidum; and this from don, or dan, a hill, where they formerly built towns.

Tun-Greece, a name anciently used for a reeve or bailiff, qui in villis, & que dicimus manerii, domini perfonam suam, cyliqve vicis anna dispersat & moderatam. Spelman.

Tun-Hoef, in Botany. See GLECHOMA.

Tuna, in Botany, slightly altered by Dillenius from the South-American or West-Indian appellation of the same plants, Tunes, Tuna, or Tunas, is retained by him for the tribe of American Figs, named Opuntia by other modern botanists. He contends, with great probability, that Opuntia of the ancients must be something very different. Linnaeus refers Tuna to Cactus; see that article.

Tuna, in Geography, a small island in lake Menzeleh; 8 miles S.E. of Tennis.—Also, a sea-port of Egypt, in the Red Sea. The entrance is between rocks, and within the greater part is filled with shoals and rocks, which make the harbour small. On the north side is a tongue of land, which forms good defence against the north-west wind; 52 miles S.S.E. of Cofier.—Also, a town of Sweden, in Helingland; 3 miles N. of Hudwickwall.—Also, a town of Sweden, in the province of Smaland; 56 miles N. of Calmar.—Also, a town of Norway, on the Glammen; 2 miles N.E. of Frederiksbogladt.—Also, a town of Arabia, in the province of Hedjas; 28 miles E. of Medina.—Also, a small island and village of Egypt, in the Tennis lake; 21 miles W.N.W. of Tinet.—Also, a town of Sweden, in Dalecarlia; 10 miles S. of Falun.

Tunla, a town of Mexico, in New Bifcaf; 74 miles N.N.W. of Durango.

Tunallus, in Ichthyology, a name given by Albertus, and some others, to the grayling, or amber. TUNB, in Geography. See Tunb.

Tunbathe, a town of Brifh, in the government of St. Paul; 65 miles N.N.E. of St. Paul.

Tunbo, a town of Sweden, in Sudermanland; 50 miles W. of Stockholm.

Tunbridge, or Tunbridge, a market-town in the lathe of Aylesford, and county of Kent, England; is situated at the favourite point of the Lowey of Tunbridge, and is distant 13 miles W.S.W. from Maidofone, and 30 miles S.E. from London. The term Lowey is derived from the Norman French, and signifies an exempt jurisdiction round the castle or chief manor to which it appertained. In the Domesday book this dioclet was included under the name of Hallow, but no mention is made of a castle; whence it seems probable it was not erected when that survey was made; though it certainly was very shortly afterwards. It was built by Richard Fitz-Gilbert, afterwards earl of Clare; and under the protection of this fortress the town grew up, and gave its own name to the castle, which name appears to have been derived from the bridges over the different streams of the Medway, which flow on the south side of the town. Of these streams, which have each a bridge, and are five in number, the southernmost was anciently the principal, as the northern now is; though the latter was originally formed to supply the inner moat of the castle. This fortress has been at different periods the scene of war and of festivity. Gilbert Rufus, who possessed it in the reign of Henry III., joining the rebellious barons, was besieged by prince Edward, when the garrison burnt the town to prevent its being useful to that prince, who, however, took the castle: but Gilbert having joined the royal standard, it was restored to him. Here he entertained Edward, then become his sovereign, in a splendid manner for many days, on his return from Palestine. Prince Edward, afterwards Edward II. also made Tunbridge his temporary residence. In the next reign, the castle and manor passed by marriage to Ralph, earl of Stafford, whose descendants were to a rank that eclipsed all other subjects, having five earldoms vested in them, and being at length advanced to ducal honours. In the reign of Henry VIII. the castle became forfeited to the crown by the attainder of Edward, duke of Buckingham. Queen Elizabeth granted the lordship and castle to her cousin Henry Carey, lord Hunsdon, from whom they descended to the Berkleys: having passed through various possessors, they are now the property of the Woodgates of Summerhill. The remains of the castle stand on the south-west side of the town, but are principally confined to an entrance-gateway, flanked by round towers, and tolerably perfect, (probably rebuilt in the 14th century,) and the artificial mound on which the keep stood. The castle was envirioned by three moats, within the outermost of which the ancient town was chiefly confined. At a short distance was a priory of Austin canons, founded by Richard de Clare, first earl of Hertford, about the end of the reign of Henry I. The buildings were all destroyed by fire in 1351; but were soon afterwards rebuilt. This was one of the houses suppressed in 1535, to endow Wolsey's intended colleges at Ipswich and Oxford. From the foundations, yet visible, this priory appears to have been very extensive: but only a few fragments now remain, besides the refectory or hall, which is used as a barn.

The town of Tunbridge principally consists of one long and wide street, kept remarkably clean, and containing many respectable houses. At the entrance from London is a stone caufeway, the gift of John Wilford, citizen of London, in 1528. The principal bridge was erected in 1775, at the expense of 1100l., from a design by Mr. Milne: near it is a wharf for the reception of the timber brought hither from the Weald, and afterwards sent down the Medway. The church, which is a spacious fabric, was new paved and ornamented, with a bequest of 500l. made by the late John Hooper, esq. It contains some good monuments of various families. Weever mentions the portraits of lord Hugh Stafford, kneeling in his coate-armour, and his bow-bearer, "Thomas Bradlaire, by him," as remaining in his time in the north window. Many bequests have been made by different persons for the use of the poor inhabitants of this dioclet; but, the principal charitable foundations are the free grammar-school, a capacious edifice at the north end of the town, which was founded and endowed by Sir Andrew Judde, a native of
of Tunbridge, and lord-mayor of London in the fifth year of Edward VI. He died in 1558; and by his will directed that certain lands, of the annual value of 56l. oz. 4d., and situated in various parishes in London, should be vested in the company of skinner of London, for the perpetual maintenance of this school, for the free education of the boys inhabiting this town and the parts adjacent. Sir Thomas Smith, who married Sir Andrew’s daughter, considerably increased the endowments, and founded fixed Exhibitions to the University; and several others were endowed by different persons. The Skinners’ Company, who are the governors, visit this school every year in May, attended, as the Statutes direct, by some eminent clergyman, who is required to examine into the progress made by the different classes. The examination is conducted with much ceremony; and honorary rewards are distributed to the best scholars. The masters have, in general, been men of eminent abilities. The learned Dr. Vicimins Knox, well known for his literary productions, succeeded his father in this office in 1778. Though the annual income arising from the respective endowments of this school is very great, the number of boys educated on the foundation is very few: which, among other instances, points out the necessity of a parliamentary revision of our ancient charitable Establishments. Immediately opposite the school is the seat of George Children, esq. to whose respectable family a very large and valuable tract of land belongs in this vicinity. The population of Tunbridge, as ascertained by the act of the year 1811, amounted to 9522, the number of houses to 958. Four fairs are held annually, and a market weekly on Friday. The adjacent roads have of late years been much improved, and that leading from the town to the Wells particularly so, by a laborious excavation on Quarry-Hill, by which the former steep ascent over it has been reduced to a very easy draught. It appears, from the “Notitia Parliamentaria,” that two members were returned in the 23d year of Edward I. for the borough of Tinebrig.

About a mile and a half to the south-east of Tunbridge is Summerhill, an ancient and celebrated seat, now the property of William Woodgate, esq. The venerable mansion was erected by Richard de Burgh, earl of St. Albans, at a vast expense, in the reign of James I.; of the style of building in whose days it forms a complete specimen; though its external appearance has, in some respects, been injured by injudicious alterations. It is a very extensive and interesting structure, and stands on a commanding eminence amidst romantic scenery.

On Quarry-Hill, about a mile and a half from Tunbridge, on the road to the Wells, is the seat of James Burton, esq. recently erected with the appropriate materials of the country, as the fragment of a castle, but replete with modern conveniences.

Within a mile, on the same road, is Bounds Park and House, now the property of the earl of Darley. The demesne surrounds the park, and consists of about a thousand acres of well-wooded land.—Hallé’s History of Kent, vol. ii. Beauties of England and Wales, vol. viii. Kent; by E. W. Brayley.

Tunbridge-Wells, a hamlet in the west half hundred of Wadhington, lathe of Aylesford, and county of Kent, England; consists of several villages within five or six miles from the town of Tunbridge, and situated in the three parishes of Tunbridge, Frant, and Speldhurst, at the distance of 18 miles S.W. from Maidstone, and 35 miles S.E. by S. from London. The principal villages are, Mount-Ephraim, Mount-Pleasant, Mount-Sion, and the Wells, properly so called. The springs, to which this neighborhood is wholly indebted for its origin, rise in the parish of Speldhurst, and were accidentally discovered in the reign of James I. (See Tunbridge Waters.) Their falluous quality being soon ascertained, wells were sunk, paved with stone, and inclosed with rails in a triangular form. Hitherto came the afflicted, and returned healthy: but as no accommodations were nearer than the town of Tunbridge, the number was few. Henrietta Maria, queen of Charles I., being much indisposed after the birth of prince Charles, flaid here six weeks; but no house was near, and the her suite remained under tents pitched upon Bishop’s-Down. The splendid court formed a fine contrast to the country, every where rude, and in the unadorned attire of nature. In honour of her majesty, the Wells changed their name from Frank to that of Queen Mary’s Wells, which afterwards gave place to Tunbridge-Wells. During the civil war the Wells were neglected, and almost forgotten; but at the Restoration, recovered their former fame. Their celebrity was greatly increased in 1664, by queen Catherine being recommended to drink the waters after a dangerous illness. She continued here about two months, in great splendour: hence may be dated an assembly-room, bowling-green, and other appropriate places, at Rutfhall; and another bowling-green and a coffee-house at Southborough. The surrounding country was spotted with neat rural habitations; till then, and fome alteration between the lord of the manor and the tenants, varied the scene. Rutfhall was now deserted for Mount-Ephraim, and that for Southborough, which was soon eclipsed by Mount-Sion. At this changeable era, many of the houses were wavelo on sledge from one into another, as the caprice or interest of the owners dictated. The town of Tunbridge was now left to its original quiet; for the Wells became a complete village, with houses sufficient to accommodate all the visitors. A chapel and school were erected by subscription, and the former being found too small for the increasing congregation, was enlarged a few years afterwards. This chapel stands in the three parishes; the pulpit is in Speldhurst, the altar in Tunbridge, and the vestry in Frank. A Presbyterian and also a Methodist meeting-house have been since built. During the last century, the buildings have gradually increased; and many persons of rank and respectability have houses for constant or occasional residence. Trade is carried on similar to that of the Spa in Germany, and consists chiefly in the manufacture of a variety of articles in wood of various kinds: the goods are well known by the name of Tunbridge-ware, as tea-cheats, dressing-boxes, snuff-boxes, punch-ladles, children’s toys, and many other articles. The air of this district is very pure and falluous, and probably aids the efficacy of the waters, which are of the chalybeate kind, and nearly of equal strength to those of the German Spa. They are considered to be of great use in removing complaints arising from febrile occupations, weak digestion, and nervous and chronic disorders. During the last and present reigns, Tunbridge-Wells has been frequently visited by different branches of the royal family. The Wells, properly so called, form the centre of the place; near which are the markets, the medicinal water, chapel, assembly-rooms, and public parades, called the Upper and Lower Walks; the Upper Walk was formerly paved with brick, but in 1793 has a Purbeck stone, at an expense of 71c.l.; the other is unpaved, and used chiefly by country people and servants. On the right of the paved walk, in the way from the Wells, are the assembly-room, library, coffee-house, and post-office, with shops for Tunbridge-ware, millinery, and different kinds of toys. A portico extends the whole length of the parade, supported by Tuscan pillars, where the company occasionally
occasionally walk. On Mount-Sion, Mount-Pleasant, Mount-Ephraim, and Bishop's-Down, are dispersed some neat villas. That of the late celebrated writer, Richard Cumberland, esq., is on Mount-Sion, and was his retreat for many years.

The High Rocks, about a mile and a half south-westward from the Wells, are much celebrated, and certainly form a very romantic and striking picture. This spot is said to have been first brought into notice by James II., who, when duke of York, came hither with his duchesses and his two daughters, afterwards the queens Mary and Anne.—Burr's History of Tunbridge-Wells, 8vo. 1766. Beauties of England and Wales, vol. viii. Kent; by E. W. Brayley.

Tunbridge, a township of Vermont, in the county of Orange, containing 1640 inhabitants; 20 miles N.N.W. of Hanover.

TUNE, the title of a short melody, or series of notes, in some specific measure. If vocal, it is a ballad; if merely instrumental, it is a country-dance, a jig, or a hornpipe. Our parochial psalmody consists of psalm tunes. The music of the "Beggar's Opera" is a medley of tunes selected from the streets of all nations, that are never honoured with the name of airs. See Ballad.

Scotch, Irish, and Welsh fongs and dances, are called national tunes. The tonadillas and fiquedillas of Spain are likewise national tunes; as are the elegant little street-fongs of Venice, called Venetian ballads; and such are the pleasing and popular Provençal and Languedocian melodies, very different from the Vaucluse and ballad tunes of the Pont-neuf and streets of Paris.

Thus far concerns tune as a subjunctive: as a verb, to tune, is a preparation for the performance of music. A found may be sweet, clear, and very perfect in itself, yet agree with one of its relatives on any instrument, or in any key: it is then said to be out of tune. The regulator of all founds in a musical composition is the key-note of a diatonic scale, in which every found must be in tune with all the intervals.

"Tune your harps to cheerful strains," that is, render your harps fit for tune or fong. This belongs to intonation, found, musical tunes. Intonazioni perfide, in Italian, is an expression for false intonation, out of tune, in singing or playing. So in French, intonation vraie, intonation fausse, are musical expressions for true or false intonation. Entoneur, in Romish cathedrals, is to give the tone of an anthem, a hymn, with the organ; and in our cathedrals, of the refpondes.

Our great lexicographer, though no musician himself, has defined the expression, to tune, with true technical accuracy, in saying that it is "to put instruments into such a state, as that the proper founds may be produced." Dr. Holder well defines the word tunable, when he says, "all tunable founds, of which the human voice is one, are made by a regular vibration of the fonsorous body, and undulation of the air, proportional to the acuteness or gravity of the tone."

Causa and Measure of Tone, or that on which a Tone of a Sound depends.—Sonorous bodies, we find, differ in tone:

1. According to the different kinds of matter; thus the found of a piece of gold is much graver, than that of a piece of silver of the same shape and dimensions; in which case, the tones are proportional to the specific gravities.

2. According to the different quantities of the same matter in bodies of the same figure; as a solid sphere of brafs, one foot in diameter, founds acuter than a sphere of brafs two feet in diameter; in which case the tones are proportional to the quantities of matter. See Gravity.

Here then are different tones connected with different specific gravities, and different quantities of matter: yet cannot the different degrees of tone be referred to those quantities, &c. as the immediate cause. In effect, the measures of tone are only to be found in the relations of the motions that are the cause of found, which are no where so discernible as in the vibrations of chords.

Sounds, we know, are produced in chords by their vibratory motions; not, indeed, by those sensible vibrations of the whole chord, but by the sensible ones, which are influenced by the sensible, and, in all probability, are proportional to them. So that founds may be as truly measured in the latter, as they could be in the former, did they fall under our lenses: but even the sensible vibrations are too small and quick to be immediately measured. The only resource we have, is to find what proportion they have with some other thing: which is effected by the different tensions, or thickners, or lengths of chords, which, in all other respects, excepting some of those mentioned, are the same.

Now, in the general, we find that in two chords, all things being equal, excepting the tension, or the thickners, or the length, the tones are different; there must, therefore, be a difference in the vibrations owing to those different tensions, &c. which difference could only be in the velocity of the courfes and recourfes of the chords, through the spaces in which they move to and from again. Now, upon examining the proportion between that velocity, and the things just mentioned, on which it depends, it is found to be a demonstration, that all the vibrations of the same chords are performed in equal times.

Hence, as the tone of a found depends on the nature of those vibrations, whose differences we can conceive no other than as having different velocities; and as the small vibrations of the same chord are all performed in equal time; and as it is found true in the fact, that the found of any body arising from one individual stroke, though it grows gradually weaker, yet continues in the same tone from first to last; it follows that the tone is necessarily connected with a certain quantity of time in making every single vibration; or that a certain number of vibrations, accomplished in a given time, constitutes a certain and determinate tone: for the frequenter those vibrations are, the more acute is the tone; and the flower and fewer they are in the same space of time, by so much the more grave is the tone; so that any given note of a tone is made by one certain measure of velocity or vibration, i.e. such a certain number of courfes and recourfes of a chord or string, in such a certain space of time, constitutes a determinate tone. See Sound.

This theory is strongly supported by our best and laziest writers on music, Dr. Holder, Mr. Malcolm, &c. both from reason and experience. Dr. Wallis, who owns it very reasonable, adds, that it is evident the degrees of acuteness are reciprocally as the lengths of the chords; though, he says, he will not positively affirm, that the degrees of acuteness answer the number of vibrations, as their only true cause: but his difference arises hence, that he doubts whether the thing has been sufficiently confirmed by experiment. Indeed, whether the different number of vibrations in a given time be the true cause, on the part of the object, of our perceiving a difference of tone, is a thing which we conceive does not come within the reach of experiment; it is sufficient the hypothesis is reasonable.

Tune by Water. To. See Lasus, Hyppasus, and Water.

Tuneke, in Geography, a town of Russia, in the government of Irkutsk, on the Ilim; 84 miles N. of Bala-ganskoii.
TUNES, in Ancient Geography, a town of Africa, mostly on a hill, to the W., and on the border of the port named Stagnum by Procopius, situated S.E. of Carthage, and surrounded by lakes and marshes. See TUNIS.

TUNG, in Natural History, the name given by the Indians to a little insect, called by the Spaniards pique, which is very common and very troublesome in some parts of the East and West Indies.

It is of the size of a small flea; its place of laying its eggs is within the skin of the human body, and it diligently searches opportunities of doing this, and often succeeds in the attempt, to the great pain and trouble of the person who suffers it.

The creature, knowing that it shall be soon crushed to death under the skin, generally makes its way either under the nails, or where there is some callus on the surface; there it eats its way along, and, in fine, lays its eggs, which hatch into so many young ones, and spread themselves between the flesh and skin all over the finger and hand, if not prevented by taking out the old one in time.

The person often does not perceive the creature's getting in, it enters so gradually and easily; but he is soon advertised of the place where it is by a violent gnawing pain, the creature really eating its way as it goes along. The only remedy in this case, is to enlarge the orifice at which it entered, and take it out whole; the wound soon heals up, and there is an end of the matter. This may often be done with the point of a needle; but if not, it is much better to submit to the opening it with a lancet than to the ill confquences which otherwise will attend it. Obcrv. fur les Coutumes de l'Afie, p. 184.

TUNGA, in Geography, a town of Africa, in the kingdom of Tunis.

TUNEBADRA, a river of Hindoostan, which runs into the Kilkiah, 7 miles E. of Rachore, in the country of Golconda.

TUNGERSHEIM, a town of the duchy of Wurzburg, on the Maine; 9 miles N. of Wurzburg.

TUNGINSKOI, a town of Ruffia, on the Irkut; 80 miles S.W. of Irkutsk. N. lat. 57° 18'. E. long. 103° 14'.

TUNGONG, a town of Meckley; 16 miles S.E. of Munypour.

TUNGRI, or Tongres, in Ancient Geography, the name of a people who, according to Tacitus, succeeded that of German, by which were designated the first people who from the other side of the Rhine had abandoned their territory to the Gauls. But according to other authors, the Tongres inhabited the country of Ligue for a long time before the entrance of the Romans into the Gauls. Conquerors of the Eburons, they succeeded them, so that they were entirely forgotten. Their conquests were very extensive; and though they were subjugated by the Franks, and Attila, commanding the Huns, completed their extermination, yet their bishops long after retained their title.

TUNGSTEIN, in Mineralogy; Scheelica calcis, Hauy. The name tungsten, denoting heavy stone, was given to this mineral on account of its great specific gravity. Its appearance is not metallic, it has a yellowish or greyish-white colour, and is more or less translucent. The structure is lamellar; it is infusible by the blowpipe, but becomes opaque. When powdered and digested with nitric acid, it communicates to it a yellow colour. These properties distinguish it from carbonates of lead, white tin-flint, and barytes. Tungsten occurs both massive and crystallized; the form of the crystals is most frequently the octahedron. The primitive form of the crystal, according to Hauy, is an acute octahedron, having the angle at the summit 62° 24', and the angle formed by the junction of the planes at the base of each pyramid 113° 36'. The principal planes of the crystals are smooth, the luster pendent. Tungsten yields to the knife, and is brittle; its specific gravity varies from 6.800 to 10.015. This mineral occurs with wolfram, (see Wolfram,) tin-flone, magnetic iron-flone, and brown iron-flone; it sometimes forms large or small granular diffused concretions with streaked and shining surfaces. It is found in the mines of Cornwall, Sweden, Bohemia, and Saxony. Its constituent parts are,

- Acid of tungsten - 75.25
- Lime - - 18.70
- Silex - - 1.60
- Oxyd of iron - - 1.25
- Oxyd of manganese - - 0.75

TUNGSTEN, in Chemistry, is the metal obtained from the ore of the same name above described. By some of the German chemists it is denominated Scheelium, from Scheele, who first pointed out the peculiar nature of one of its oxyds. Tungsten was first obtained in the metallic state by the Meffrs. D'Elhuyart from another of its ores called wolfram. New experiments have been since repeated by Vauquier, Klaper, Meffrs. Allen and Aikin, and others, with various success, and very lately they have been confirmed by Bucholz.

This metal has been obtained by exposing the tungstate of ammonia to a violent heat. It has never been procured in the state of a solid button, or in large panes, but only in small panes as fine as sand, having a strong metallic lustre, a light iron-grey colour, and slightly agglutinated. It is one of the hardest of the metals, and very brittle. Its fp. gr. according to the D'Elhuyarts, is 17.6; according to Meffrs. Allen and Aikin, 17.2; and according to the late experiments of Bucholz, 17.4, which is about the mean of the others, and probably very near the truth. Hence, next to gold and platinum, it is one of the heaviest metals.

This metal requires a heat of at least 170° of Wedgwood (probably much higher) to melt it. It is not attracted by the magnet. Exposed to heat in an open vessel, it gradually absorbs oxygen, and is converted into an oxyd. Two oxyds of this metal were formerly known, viz. the dark brown or black, and the yellow or tungstic acid; but besides these, Bucholz has lately described another of a dark brownish-red or reddish-brown colour, and which he considers to be intermediate to the other two. Of these, the best brown and most important is the yellow oxyd, or tungstic acid. This oxyd is without taste. It is insoluble in water, but remains long suspended in it. It has no active or vegetable colours. It is stated to be composed of

| Tungsten | - | 80 |
| Oxygen | - | 20 |
| Total | - | 100 |

Little is known of the nature and composition of the other oxyds of this metal, so that we cannot with any degree of certainty ascertain the weight of its atom. This metal combines with sulphur and phosphorus, and forms alloys with many of the metals; but these compounds do not appear to be interesting. The yellow oxyd, or tungstic acid, seems capable of forming compounds with all the alkaline, earthy, and metallic bases, though very little is known at present of the nature of these compounds.

TUNGURAGUA, in Geography, a mountain of Peru; 21 miles S. of Riohamba.

Tunguragua. See Maranon.

TUN-
TUNGUSES, a branch or division of the Mandchures, or Mandhu, who originally composed one people with them, as appears not only from their mutual resemblance in features, manners, and customs, but chiefly from their agreement in language. The Tungufes call themselves Ozyes, probably from the usurped founder of their race; or, like most of the Siberian tribes, from the word which in their language signifies men. They are called Tungufes only by the Oltiaks of the YeniSef and the Tartars: By the Mandhu, they are denominated Bolomi, protectors, or Orontfebhen, people with reindeer. The extensive defects in which they now nodizade, reach from W. to E. from the YeniSef across the Lena, as far as the Amoor and the Eastern ocean. From S. to N. they keep between about the 53rd and 65th degree of N. lat., and accordingly touch neither upon the Songarian borders, nor upon the coasts of the Frozen ocean. Being of an accommodating disposition, they have admetted into their seats Oltiaks, Samoyedes, and particularly Yakutans. The districts now mentioned lie mostly in the government of Irkutsk; nevertheless, some few races of the Tungufes are reckoned as belonging to the government of Tobolfs. The first accounts which the Russians obtained of these people were received from the Oltiaks of the YeniSef; and in the year 1697, Cossacks were first sent from Mangafey against the Tungufes, to force them into submision. On occasion of these Russian attacks, the Tungufes displayed a greater degree of courage than the other Siberians; nor were they brought to the imperfect state of submision in which they are now held, till the latter half of the last century. By the enumeration of the year 1766, they consisted of 12,000 males; but besides these, distinct Tungufian flems wandel among the Siberian nations, who together amount to about 1500 yoorts, or families. Although they constitute one of the most numerous nations of Siberia, yet, on account of their roaming mode of life, few flems of them can be actually registered. The Tungufes who nomadise about the coasts of the Eastern ocean, are known under the name of "La mutants." Of these, in the forementioned year, only about 400 men were enrolled to the payment of tribute.

The Tungufes are indefatigable in the chase, and are constantly changing their habitation. In the feasons of fishing and of collecting berries, they remain for some time nearly stationary; and then they remove their tents, leaving their supplies of dried fish and berries in large boxes, constricted on trees or poles, for the benefit of themselves and their tribes, in travelling during the winter. They seem callous to the effects of heat or cold; their tents are covered with samoy, or the inner bark of the birch, which they render as pliable as leather, by rolling it up, and keeping it for some time in the flame of boiling water and smoke. Their winter dress is the skin of the deer, or wild sheep, drested with the hair on it; a breast-piece of the same, which ties round the neck, and reaches down to the waist, widening towards the bottom, and neatly ornamented with embroidery and beads; pantoflions of the same materials, which also furnish them with short fockings, and boots of the legs of reindeer, with the hair outward; a fur cap and gowes. Their summer dress only differs in being simple leather without the hair. They are religious observers of their word, punctual and exact in traffic; some few are chirstianised, but most of them are Demonolatists, have their forreces, and sacrifice chiefly to evil spirits. They commonly hunt with the bow and arrow, but some have rifle-barrelled guns. Instead of burying the dead, they place the body, drested in its belt apparel, in a strong box, and suspend it between two trees. The implements of the chase belonging to the deceased are buried under the box. Except a forrecer is very near, no ceremony is observed; but in his presence they kill a doe, offer a part to the demons, and eat the rest. They allow polygamy, but the first wife is the chief, and is attended by the rest. The ceremony of marriage is a simple purfachne from her father; and the price is from 20 to 100 deer, or the bridel-groom works during a stated time for the benefit of the bride's father. The unmarried are not remarkable for chastity. A man will give his daughter for a time to any friend or traveller to whom he is attached; if he has no daughter, he will give his servent, but not his wives. They are in fine somewhat below the common nature, very active, and have lively inviting countenances, with small eyes; and both sexes are very fond of brandy. The Tungufes wander about the mountains, and seldom visit such plains as are occupied by Yakuts; but frequently resort to the solitary habitations of the Cossacks, appointed to the different flages; as they are there generally supplied with brandy, needles, thread, and such tri tes as are requisite among them and their women, who always accompany them in their wanderings. See MANDSHURES.

TUNGUSKA, a river of Russia, which rises in lake Baikal, and runs into the Enifei, about 20 miles S. of Enifei. In the former part of its course it is called Angara, in the latter Tunguska or YeniSef.

This Upper Tunguska, for there are three rivers of the same name, which bears the name of Angara till it unites with the Ilim, takes up several other rivers, as the Koda, the Tfhaveltech, the Iriki, the Kamenga, the Olenka, and the Tataritkaia, all on the right; and to the left, the Oka, and the Tihana or Uda. This Tunguska has for the most part a bed strewed with rocks, and forms several cataracts, five of which are very confiderable. Although it be navigable, the navigation is toilome and difcult. The Middle or Podkamnenaia Tunguska rises in the government of Irkutsk, among the Baikal mountains, not far from the origin of the Lena; and after a course of about 800 verits, and after having, on the right, taken up the Thiuacha and the Thorna, falls into the YeniSef in 62° N. lat. The Lower or Nimvei Tunguska takes its source in the fame diftrict, but bends its course northward, and after having taken up on the left the rivers Niepa, Svetiaia, with many others, and on the right the Rofmakaia, the Turiga, and the Gorela, and running a course of about 1500 verits, strikes into the YeniSef, not far from Turukansk. In this river are several dangerous whirlpools.

TUNGUSKOI, Ust, a town of Russia, in the government of Tobolfs; 24 miles S. of Enifei, at the conflux of the Enifei and Tunguska.

TUNGUSLI, a town of Russia, in the government of Tobolfs, on the Ob; 56 miles S. of Tara.

TUNIA, or TUNJA, a town of South America, in the vicerealty of New Granada; 60 miles N. of Santa Fe de Bogota. Tunia, founded in 1539, was formerly an opulent town, but has now declined, the inhabitants not exceeding 200. The edifices retain marks of former splendour, and the parish-church might well ferve for a cathedral. Here are three convents, that might answer the purpose of manufactories. N. lat. 5° 5'. W. long. 72° 56'.

Tunic, in Botany and Vegetable Physiology, the E. diff name of the appendage to certain feeds, termed Anillus in Latin; see that article, where, however, the explanation given by our predecessor, Dr. Woodville, refers only to the use of the term Arillus in the genus Carex. The Tunic, or Arillus, is attached to the bafe only of the feed, immediately adjoining to the Scar, Hilm, and envelopes the fett of the feed more or lefs completely and closely. Its fize and texture, as well as colour, are various. In the Spindle-tree,
tree, Euonymus, the part in question is a pulpy, wrinkled, orange-coloured wrapper; in Ascleia a beautiful, firm, close, fearect cup, embracing great part of the lower half of the black hard seed; in Hippophae a double membraneous, but tough, coat, within the pulp of the berry; in Myristica, the Nutmeg, a jagged, brittle, highly aromatic, complex integument, well known by the name of Mace. Narthecium, and great part of the Orchis, have each of their minute seeds clothed in a lax membraneous Tunic, extending beyond them at each end, and probably designed to give them buoyancy, like a sort of wing. Oxalis has an elastic pouch-like Tunic, serving to project its polisher feeds to a distance, like the hard rigid bivalve Tunic of Dictamnus, Boronia, and their allies. (See Rutaceae.) That curious genus named by M. König, in Ann. of Bot. v. 2. 360, Bignonia, the Ake of Guinea in the West Indies, has each seed supported by a large, fleathy, lobed Tunic, for which alone, as a delicate article of food, the tree is cultivated. Some difficulty occasionally arises in differentiating between a real Arillus and the Tela of certain seeds, or at least the outer coat of the latter. (See Testa.) This difficulty occurs in the order of Alserio-folia; witness Cynoglossum; while the real capsules of Gramium, Pelargonium, Malva, etc., have, on the other hand, been sometimes called Arilli.

TUNIC, a kind of waistcoat, or under garment, worn by the ancients, both at Rome and in the East.

The common people ordinarily wore only a tunic; but those of better fashion wore a toga or gown over it. The philosophers wore a gown without a tunic, as professing to go half naked.

The tunica was peculiar to the men; the under garment of the women not being called tunicas, but flosa.

The senators wore their tunicae enriched with several little pieces of purple, cut in form of large nails; whence it was called laticlavia: the knights had less nails on their tunica, which was hence called angusticlavia: the common people wore their tunicae without any clavi at all. And it was by these three different sorts of tunicae, that the three different orders of the Roman people were distinguished in habit.

It has been a common opinion, that the angusticlavia distinguished the knights from the common people, in the same manner as the laticlavia did the senators from those of the equestrian rank. But Rubenius avers that there was no manner of difference between the tunics of the knights and those of the commons. As to the persons who had the honour of wearing the laticlavia, it may be maintained, says Kennet (Ant. of Rome, p. 308.), that the sons of those senators who were patricians had the privilege of using this vest in their childhood, together with the praetexta. But the sons of such senators as were not patricians, did not put on the laticlavia till they applied themselves to the service of the commonwealth, and to hearing offices. Yet Augustus changed this custom, and gave the sons of any senators leave to assume the laticlavia presently after the time of their putting on the toga virilis, though they were not yet capable of honours. And by the particular favour of the emperors, the same privilege was allowed to the more splendid families of the knights.

In the declension of the empire, the tunics did not only reach down to the ankles, whence they were called talares, but had sleeves too coming down to the hands, whence they were called chromoteta. And now it was counted as scandalous to appear without sleeves, as it had been hitherto to be seen in them; and, therefore, in the writers of that age, we commonly find the accursed perfons at a trial habited in a tunic without sleeves, as a mark of disgrace and infamy.

Besides the different sorts of tunicae above-mentioned, there was also the tunica palmata, worn by generals in a triumph, and perhaps always under the toga picta. It hath its name either from the great breadth of the clavi, equal to the palm of the hand, or else from the figures of palms embroidered on it.

Among religious, the woollen shirts, or under garments, are styled tunices, or tuniques.

TUNICA, in Anatomy, a technical name applied to the membranes which compose various organs; thus the serous and mucous membranes, and the muscular ftratum of the stomach or intestines, are called their tunicae: in the same way we have the tunics or coats of the eye, the blood-vessels, the telces, &c. &c.

TUNICA, in Botany, a name adopted by Dillenius, as he himself avows, from the apothecaries, and perhaps originally corrupted by them from Petonica, or Betonica, its synonyms. These names all belong to the Floe Caryophyllus, Clove-flower, Carnation, or Pink; and Dillenius was led to the above choice, for the purpose of removing the ambiguity arising from Caryophyllus; (see that article,) as properly belonging to the valuable spice called Cloves. Limnæus, not satisfied with either appellation, invented a new one, which has been generally approved. See Dranthis.

TUNICATED ROOTS, among Botanists, such as are formed of a multitude of coats surrounding one another. See Root.

TUNIOK, in Geography, a town of Hungary, on the river Samos; 6 miles E. of Etef.

TUNIS, a city of Africa, and capital of the country so called, situated on a rising ground, on the west bank of a lake, or rather a shallow in form of a lake, communicating with the gulf by a narrow channel. The situation of Tunis, probably first chosen by some fishermen, to whom that of almost all the maritime cities is to be ascribed, appeared to the inhabitants to be preferable to that of Carthage; as soon as, enriched by rapine, they dared openly to attack the trade of every nation. The eminence on which the ruins of Carthage, N.E. of Tunis, that ancient rival of Rome, advances into the middle of the gulf, and on that account would have exposed the Tunifiants to be taken by surprize. This city was called, by Diodorus Siculus, "Léuckon Tunéta," that is, White Tunis; perhaps from the chalky cliffs which it round, when viewed from the sea; and was founded about 1250 or 1300 years B.C., as appears from Herodotus and the Parian chronicle. It is surrounded by lakes and marshes, which, however, do not render it unhealthy, which is, by Dr. Shaw, attributed to the number of myrtaceous and myrtle trees, roemaries, and other gymnos and aromatic plants, with which they heat their ovens and their baths; the water is obtained a mile distant, for the general use of the inhabitants. The infected atmosphere of Tunis is attributed by baron de Tott to the putrid emanations of a channel, which conveys all the filth of the city to a neighbouring lake; which lake likewise produces exhalations that appear no less dangerous; and the sultrubt of Tunis, he says, can only be attributed to the depth of the valley, which comes down to the gulf, and which, by attracting the vapours of the channel and the lake, does not allow them to acquire that degree of corruption which would render them hurtful to the constitution of the inhabitants. The Tunifiants are the most civilized nation of Barbary, with little of the insolent haughtiness of the Algerines; and affairs with the government are transacted with ease: the English, French; Dutch, and several European states, having confids here, who are treated with civility and respect. Including the suburbs, Tunis is, by Dr. Shaw, supposed

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TUNIS.

Tunis, the central region of Northern Africa, usually dignified with the title of kingdom; bounded on the north and east by the Mediterranean, on the south by Tripoli, and on the west by Algiers. This is the western part of the proper Africa of antiquity, and was formerly the chief seat of Carthaginian power; and in the middle ages, Tripoli was subject to Tunis, which was seized by Barbarossa in 1533.

It is now about 200 miles from north to south, and 120 from east to west. According to Desfontaines, this kingdom begins in the east at the isle of Garbi, and terminates in the west at the river Zaine, called also Tufca or Suftca. After the decline of the Roman empire, this country came under the power of the Vandals and Goths; and after them, under the Saracens, when they were governed by viceroyts, called emirs. It afterwards became subject to the emperor of Morocco. For a space of time it was an independent and powerful kingdom. In the year 1538, it was over-run by Barbarossa; and notwithstanding the endeavours of Charles V. and his successors, the kingdom was made a province of the Ottoman empire, under the dominion of Selim II., by Sinan, bahawf of the Levant. At present the whole kingdom is divided into two circuits, the summer and the winter, which the bey makes in perfon through his dominions at those two seafons. The summer circuit, or northern district, is by far the most pleasant, fertile, and populous, and has the greatest number of cities, villages, and downs, and carries the fairest appearance of plenty, prosperity, and cheerfulness of the two; advantages owing to the mildness of its government, and its being free from tyranny and oppression than that of Algiers. The Tunifians, in general, are like the Algerines; a mixture of Turks, Moors, Kabibs or indigenous inhabitants of the mountains, Arabs, Jews, and Chrifitian merchants, and slaves; with this difference, that they are here polite and civilized. They are much more kind and humane to their slaves, in general; though they treat the knights of Malta with greater severity. In other repects, the Tunifians are courteous to strangers; and all affairs, with the regency are transacted in a very friendly manner: the confines that reft here are treated with greater affability and condescension, justice, and dispatch, than in any other court on the African coasts: in a word, this nation hath, for many years, been more intent upon trade, and the improvement of their manufactures, than upon plundering and cruising; upon which account, it hath cultivated the alliance of many Chrifitian powers. The dress of the Tunifians, of both sexes, is much of the fame fashion with that of the Algerines. The women are handsomely neat, and more familiar: they go, indeed, veiled out of doors, but are allowed to be seen and converse with strangers, their husbands not being tainted with such jealousy as reigns among other Africans. The religion is the same as that of the Algerines. This kingdom, as well as Algiers, and others along the Barbary coast, are very subject to earthquakes, which commonly happen after heavy rains, at the end of the summer, or in autumn, and are often felt at a great distance from land, where the depth of water hath been above 200 fathoms; in other respects, the country is, for the most part, as healthy and fertile as any under the same climate. The northern parts, which are the best cultivated, enjoy a wholesome temperature. The southern part is sandy, barren, and parched by a burning fun; that near the sea is rich in olive-trees, and presents a great number of cities and populous villages. But the western part abounds with mountains and hills, and is watered by numerous rivulets; its environs being extremely fertile, and producing the finest and most abundant crops. The soil is in general impregnated with marine salt and nitre, and springs of fresh water are more rare than salt. The chief river is the Mejerda, or ancient Bagrada, which in summer is not navigable. The chain of Atlas feems here to terminate in Cape Bon, being called the mountains of Megala, Uzelette, &c. The winds are mostly from the sea, confequently refreshing; but those that blow from the southern sandy deserts are quite suffocating, especially as they prevail mostly in July and Auguft: if they continue five or six days incessively, the inhabitants are obliged to keep themselves cool by sprinkling their floors with water. The sea-winds, that blow west-north-west and north, bring dry weather in summer, and rain in winter; but the easterly, as well as the footherly, are for the most part dry, though attended with a thick cloudgy atmosphere in most fefons. Their first rains commonly fall in September, and sometimes in October; about three weeks after which, the Arabs break the ground, sow their corn, and plant their beans, barley, lentils, and garvances; their harvest usually begins in May, or the beginning of June, according to the quality of the preceding fefon. The Tunifians are much more addicted to agriculture than their neighbours, the Algerines, and are for making the most of every inch of their ground. Mines of metal and minerals they disregarde; though Dr. Shaw oberved, among the mineral productions of Tunis, alabaster, cryftal, boles, plumbage, iron, and lead. The cattle are small and slender, and the hofes have degenerated. Here are lions, panthers, hyenas, chakals, and other ferous animals. The manufactures are velvets, tilks, linen, and red caps worn by the common people. The government of Tunis is perfect, like that of Algiers, is altogether despotic; but with this difference, that there it is elective, and here not only hereditary, but the bey hath power to name which of his sons he pleafes for his fucceffor, without regard to elderfhip; or, in cafe he doth not think him worthy, he may appoint a brother, or a nephew, to the fucceffion; in all other cafes, likewife, they are equally abfolute and independent, either on the Porte, or the Douwan or Divan. They were once, indeed, under the protection of the former; and the rapacious extortion and tyranny of its bahawfs had, in some measure, obliged them to shake off their yoke, and form a government of their own, which they settled in such a manner, that their days, as they were then called, could do nothing without the advice and consent of the Douwan or Divan; but they have found means, in time, to rid themselves of this uneasy efg alo, though
they still retain a kind of form or shadow of both. The
Porte hath a balhaw refiding here, but in power and influence
he is a mere cypher, and serves only to remind the Tunisians,
that they were once subject to the Turkish sultans. The
Dowwan, being chiefly composed of friends and creatures
of the boys, is rather assembled to give a forced approbation
to their revolutions, than to consult them about the justice
or expediency of them. At the first fetting of this new
form of government, the deyship was the supreme dignity,
as it is still at Algiers; as that of bey was the next in rank,
but wholly subordinate to it. However, having since built
their power upon the ruins of the deys, they have, by de-
grees, raised the beyship to be despotic and independent;
and by making it hereditary, have prevented, in a great
measure, those frequent depilations, rebellions, and mas-
facres, which are the almost constant concomitants of the
regal authority, wherever it is made elective. Yet far from
preventing jealousies, cabals, and rebellions, in spite of all
their precautions, the dignity oftener falls to the share of
that son who has been able, by his address, to form the
strongest party, than to him who has been appointed to it
by the father. Hence it is, that whenever the throne be-
comes vacant, whether in the course of nature, or by open
treason and rebellion, it is seldom filled up again without
a great deal of bloodshed, rapine, and violence, in proportion
to the number of competitors. In the summer the bay of
Tunis resides in the northern part, and in the winter retire
s to the south, where is a lake of considerable extent, the
"Palus Tritonis" of antiquity. The authority of the bay
extends over a large tract of country, of which he receives the
tribute, with a small army, which marches out annually for
that purpose. Tunis, which had formerly a considerable
commerce with France, exports thither corn, oil, beans,
linens, wax, wool, hides, and Morocco skins; and receives,
in exchange, Spanish wool, Languedoc cloths, vermilion,
fugar, pepper, cloves, wine, brandy, paper, hardware,
iron, and steel. The Italian trade is wholly carried on by
the Jews, who send the same commodities to France, and
import from thence Spanish cloths, damasks, several parts
of silk and woollen stuffs, gold and silver tissued. The
French pay 3 per cent. for all the goods they bring from
France, and the Jews 10 per cent. on their imports from
Italy. The Turks and Moors export to the Levant
woollen stuffs, lead, gold-dust, and chequins, and a vast
number of bales of caps; and bring, in return, silks, calicoes,
iron, alum, and vermilion. They send much of the same
kind of commodities into Egypt; but the oil that is
considered thither must be put up in jars, and not in caisso,
because the greatest part of it is designed for the lamps of
Megaza and Medina; and the Arabians would think it pol-
luted, as the vessels might formerly have contained wine.
They import, in exchange, from thence, linen, cotton, rice,
flax, and coffee. The number of French ships freighted
at Tunis, by Turks, Moors, and Jews, has amounted yearly
to one hundred and fifty to the Levant, and fifty for France
and Italy; as for those of the English, their number is un-
certain. All public conventions and instruments are written
in the Arabic tongue, but the public commerce is com-
monly carried on by the medium of the Lingua Franca.
Gadames, or Galama (which see), had formerly a flourishing
commerce; but it has ceased since the caravans passing
from Tripoli to Tombuctoo do not stop there, but at
Agadez. The caravans of Tombuctoo bring slaves, ostrich
feathers, ivory, and amber; those of Sallies, gold, as well
as those of Gadames, which also bring Negro slaves. Ruins
of ancient monuments are found near Zowan, Spitola,
Caffa, Pharahfa, Hammamet, and Chafpa. Desfontaines
mentioned in particular with admiration a large and beau-
tiful amphitheatre near Elgen. Some vestiges are also
found here and there of an ancient Carthagian aqueduct,
which served to draw water from the springs of mount
Zowan; but there fearfully exist any other remains of Car-
thage. Near the river Mejesta are still seen some ruins of
Utica, which are, at present, at the distance of about
4,000 fathoms from the shore; though this city was for-
merly a sea-port.

At Tunis, accounts are kept in piastres of 52 apers, each
after being divided into 12 burbes. The coins consist
of gold tunisians, valued at 100 apers; of silver nantras (a
square or shapeless coin), valued at 52 apers; and of
doubles, valued at 24 apers. The burbes are a small cop-
per coin. Gold, silver, and pearls, are weighed by the
ounce of 8 termini; and 80 ounces of Tunis = 81 ounces
English troy. The cantaro, which is a weight for mer-
chandise, contains 100 rotoli, weighing about 111 pounds
avoirdupois. The caffello, a corn measure, contains 18
weals, or 216 saws; 53 caffelli = 67½ English quarters.
The mattaro, an oil measure, is 32 rotoli, = 35½ pounds
avoirdupois, and is about 5 English gallons. The mattaro,
wine measure, is only half that for oil measure. The pic,
long measure, is for woollen 29½ French lines, or 26½
English inches, for silk 24½ English inches, and for linen
18½ English inches.

TUNKAT. See TOUCAT.
TUNKERSTOWN. See EPIRATA.
TUNKHANOCK, a township of Pennsylvania, in the
county of Luzerne, containing 884 inhabitants.
TUNKHANOCK Creek, a river of Pennsylvania, which
runs into the east branch of the Susquehanna, N. lat. 41° 31'
W. long. 75° 57'.
TUNNA, in Commerce, a measure of grain in Sweden,
equal to four bushels five quarts Winchester measure.
TUNNAGE, or TONnage, a duty or custom due for
merchandise brought or carried in tons, and such like vessels,
from or to other nations: thus called, because rated at so
much per ton.

Tunnage is properly a duty imposed on liquids according
to their measures; as poundage is that imposed on other
commodities according to their weight. See POUNDAGE
and CUSTOMS.

TUNNAGE is also used for a certain duty paid the
mariners, by the merchants, for unloading their ships arrived
in any haven, after the rate of so much per ton.
TUNNEL, or TUNCEL, an instrument through which
any liquor is poured into a vessel.

Part of a draught of a chimney, above the mantle-piece,
is also called by the same name.
TUNNEL is a large subterranean arch, driven through a
summit or hill, for the passage of boats upon a canal con-
tinued through the same: also, smaller drains or culverts
are called tunnels; and the execution of making and driving
them is called tunnelling.

TUNNEL-Pit, a well or shaft sunk to the line of an
intended tunnel, through which the stuff excavated from it is
drawn up to the surface.

TUNNEL-KILN, in Agriculture, a term applied to a lime-
kiln in which coal is burned, in contradistinction to that in
which wood, peat, and other such matters are used, termed
the flame-kiln. See LIME-KILN.

There is much less waft of heat in the former forts than
in those of the latter, and they have much advantage in the
quick dispatch in drawing the lime; as, in the flame-kilns,
after the matters are burnt, much time is lost by waiting
until the lime be cold, and by emptying it at the mouth
part
The nature of these different kinds of kilns, and many useful particulars relating to them, may be seen in detail in the Corrected Report on Agriculture for the County of Suffolk.

Tunnel-Net is a kind of net much used for the catching of partridges; thus called from its form, which is a cone fifteen or eighteen feet long.

This net must be made of three-twisted thread, and must not be too thick; it should be dyed green, that the colour may give no suspicion to the birds, and the meshes should be about two inches and a half broad.

Into the kind meshes, at the larger end, there must be put a smooth wooden rod, about the bigness of a gun-rammer; of this must be made a sort of hoop, both ends being tied together; and at different distances from another, there must be placed many more such, which are to be rounded in the same manner, and are to support the net its whole length in the tunnel form. Two flakes, or strong pegs, must be fastened at the sides of the entrances into the net, and one at the farther end, or narrow part: the two flifts are to keep the mouth of the net sufficiently extended, and the last is to keep it pulled out lengthwise to its full dimensions, the hoop preventing its falling in.

There must be used with this net two others, of that kind which they call ballers. These are long and straight nets, and are to be fastened down to the mouth of the tunnel-net on each side, extending seven or eight fathoms on each side from it, so as to take in fourteen or sixteen fathoms in front, beside the breadth of the mouth of the tunnel-net, and to direct all that shall move forward within that compass into the net.

In order to use this net, a covey of partridges is to be found, and then the net is to be placed at a considerable distance behind them: when this is fixed, the sportsman is to take a compafs, and get before the birds with a flaking horse or flaking ox, and then to move forward, driving them towards the net. This is to be done gently and carefully; they are not to be driven at once strait forwards, but the sportsman is to wind and turn about, and at times to stand still; as if the horse was grazing. If the partridges, in the time of driving, make a stand, and look at the machine, it is a sign they suspect it, and are ready to take wing: in this case the sportsman must stand still, or even go back a little; and when they are become composed again, he is again to advance upon them. If any single bird lies remote from the reft, the sportsman must take a compafs around him, and fetch him in; for if he takes wing the reft will all follow; in this manner, with patience and caution, the whole covey may be driven like a flock of sheep up to the nets. A real horse, trained to the purpofe, is, however, much better than a flaking machine. The ballers, or wings of the tunnel, must not be pitched ftraight, but in a sort of femicircle; and the birds, when they frop their march, will run along them to the middle, where the mouth of the tunnel is open.

When they come to the mouth of the tunnel, the old ones will make a stand, as if to confider what was before them; but on prefling gently on them with the horfe, the young ones will run in, and then all the reft will follow.

The sportsman must then make all the haffe he can to the mouth of the net, to secure them from coming back again.

TUNNING, or TONNING, a part of the process of brewing, or rather an operation which is the sequel of it.

The tunning of beer, &c., is performed various ways; some being of opinion it is best tunned as it cools, or begins to come; while others let it stand longer to become riper.

The most regular method is, to cleanse and tun just as it comes to a due ferment, and gets a good head; for then it has the most strength to clear itself. What works out of the cask is to be supplied with fresh beer of the same brewing.

TUNNING-DISH, a term applied to a large wooden dish, employed in tunning malt liquor.

TUNNUTDIORBIK, in Geography, an island near the coast of East Greenland. N. lat. 60° 45'. W. long. 46° 50'.

TUNNY, in Ichthyology, a name given by us to the Spanish mackerel, a large fish of the focomeber kind, called by authors thytnus and arcytnus, by Salvin limafa, and pelamys by Arifotole, Allan, and the other old writers. See Scorber.

In the lochs on the western coasts of Scotland, as well as in the Mediterranean (see Scorber Thytnus), tunnies are also found in pursuit of herrings, and sold to people, who either carry them fresh to the country markets, or salt and preserve them in large cafsks. The pieces, when fresh, look like raw beef, but when boiled turn pale, and have somewhat the flavour of salmon. One of them has been found to weigh four hundred and sixty pounds.

TUNS, The, in Geography, rocks in St. George's Channel, near the coast of Ireland, and county of Wexford; 3 miles N.E. from the Saltee islands.

TUNSLA, a town of Sweden, in the province of Savolax; 52 miles N. of Nyfiol.

TUNSTALL, JAMES, D.D., in Biography, a learned divine, was born about the year 1710, and educated at St. John's college, Cambridge, of which he was a tutor and fellow. In 1741 he was chosen public orator of the university, and became one of the chaplains to archbishop Potter. It was said of him, that many came to Lambeth humbe, but no one left it so but Dr. Tunfall. He was created D.D. in 1744, and in 1757 took possession, upon an exchange, of the valuable vicarage of Rokstake, in Lancashire; but his life terminated in 1772. He had a controversy with Middleton concerning the letters between Cicero and Brutus, of which he had made great use in his "Life of Cicero," and which Tunfall not only refuted, but proved, in the judgment of Markland, to be suppolitious. He was also the author of some other publications: the principal of which is his "Academia, Part I, containing several Discourses on the Certainty, Difficulties, and Connexion of Natural and Revealed Religion," continued, as it is suppos'd, by Part II. printed after his death, under the title of "Lectures on Natural and Revealed Religion, read in the Chapel of St. John's College, Cambridge." Nichols's Anecdotes.

TUNSTEDE, or TUSTEDE, an English D.D., and a learned musician, who flourished in the fourteenth century. Pits, Bâl, Tanner, and all our biographical writers, speak of him with respect. And among the MSS. at Oxford, we found, in 1780, a Tract on Musick, entitled "Quatuor Principalia Artis Musicæ," by this writer, dated 1351, Bodl. 515, bound up with other tracts.

What this author calls the four principals of music, will not appear from his own manner of dividing the work. In the first part or principal, consisting of nineteen chapters, he treats of music in general, its constituent parts and divisions. Secondly, of its invention, intervals, and proportions; twenty-four chapters. Thirdly, of plain chant and the ecclesiastical modes; fifty-eight chapters. Fourthly, of measured music or time, of difficult, and their several divisions. This last principal is divided into two sections, of which the first contains forty-one chapters, and the second forty.
forty-nine. The whole treatise fills a hundred and twenty-four folio pages: the diagrams, which are very numerous, are beautifully written, and illuminated with different coloured inks; and it seems to be in all respects the most ample and complete work of the kind which the fourteenth century can boast.

TUNUB, in Geography, a town of Egypt, on the west branch of the Nile; 6 miles N.N.W. of Amrus.

TUNUPOLOH, in Zoology, the name of an East Indian species of viper, found principally in the islands of Ceylon; it is of a small size, and of a fine fattin-like glows, beautifully variegated with shades of brown. Ray.

TUONI Ecclesiastici, Ital., in Musici, tones of the church. (See Canto Fermo and Moni.) The modi authentic are the odd numbers 1, 3, 5, 7; and the modi plagali, the even numbers 2, 4, 6, 8.

TUONO, Ital., a musical tone or sound. (See Tone.) "Tuono," says the Cruica, "apprezzo a' mulcic, sono i gradi, per cui paffano succesivamente le voci e li fuoni nel falire verfo l'acuto, et nello fendere verfo il grave colla regolata interpofizione de' femitoni a' loro luoghi per riempire gli'intervalli maggiori confonanti, e diifonanti."—"Tones among musicians are those degrees or gradations by which voices and instruments ascend and descend successively from the grave to the acute, and descend from the acute to the grave, with the interpofition of the necessary femitones to fill the greater confonant and diifonant intervals." Varchi. In this arrangement of the scale, all the simple and perfect confonances are found, that is, the key-note, the fourth, the fifth, and the diapason or octave.

TUP, in Rural Economy, a term often applied to a ram in different districts.

TUPELO Tree, in Botany. See Nissa.

TUERSDORF, in Geography, a town of Saxony, in the Vogtland; 4 miles N.E. of Oelnitz.

TUPE, a town of Bohemia, in the circle of Chrudim; 8 miles N.W. of Chrudim.

TUPICA, a town of Peru; 50 miles S.E. of Lipes.

TUPINAMBAS, a nation of South American Indians, who inhabited near Rio Janeiro; but after the settlement of the Portuguese, removed towards the river of the Amazons, where the Tapayos are now their descendants.

TUPISTA, in Botany, an unexplained name, used by Mr. Ker, in Curt. Mag. t. 1655.—The plant which bears it, T. squillata, was imported by Mehrs. Lodiges from Amboyna, in whose flow it flowered, for the first time, in April 1814. The learned author did not examine the specimen in a perfect state, fo that his ideas, like our's, must be chiefly derived from Mr. Edward's figures, the accuracy of which there is no reason to doubt, and from which the close affinity of this plant to Orontium japonicum is apparent. No botanist however is as yet sufficiently acquainted with the parts of fructification in either to determine their generic character, or to distinguish them generically from O. aquatica. See Orontium.

T. squillata has a perennial tuberous root, with thick fibres. Stem none. Leaves few, erect, equitant, lanceolate-oblong, entire, coriaceous, smooth, about two feet long. Stalk solidary, erect, not a sparsely fimple, cylindrical, smooth, firm, purplish, bearing a dense spike of numerous scented flowers, of a pale dingy, or brownish lead-colour, quite seiffulle, with a bractea at the base of each. Calyx none. Corolla of one petal, bell-shaped; the limb in fix or more spreading segments, each bearing on its disk a seiffulle, two-lobed, but seemingly imperfect, anther. A cylindrical body, four-lobed at the top, in the centre, looks like a germen and stigma.

TUPMAN, in Rural Economy, a term frequently applied to a breeder and dealer in rams, in some districts, as those of the midland parts of the kingdom. See Ram.

TUPPA, a name given to Tibet children, who at the age of eight or nine years are admitted into the monastery at Teophoo-Loomboo, and who are occupied in receiving the instruction suited to their age, and the duties for which they are designed. See Tohba.

TUPPING, in Rural Economy, a term applied to the impregnating of ewes by the rams or rams.

TUPPING-TIME, the period or season of putting rams or rams to the ewes. It should be done neither too early nor too late, as in the former case the lambs are dropped too much in the cold weather, while in the latter they are liable to be of inferior size for the markets. It is consequently best done according to the nature of the circumstances. See Sheep.

TUQUILIGASTA, in Geography, a town of South America, in the province of Tucuman, on the Salado; 4 miles S. of St. Yago del Eletro.

TUR RABAH, a town of Asiatic Turkey, in the government of Morah; 10 miles E. of Nifabun.

TURA, a river of Russia, which rises about 40 miles W. of Verechotra, in the province of Ekaterinburg, and runs into the Tobol, opposite Turchatkoi, in the government of Tobolok. See Tobol.—Alfo, an island in the Grecian Archipelago. N. lat. 39° 34'. E. long. 24° 15'.—Alfo, a town of Hungary; 24 miles W. of Topolzian. —Alfo, a town of the county of Tyrol; 24 miles S.W. of Trent.

TURA Bamba, a spacious plain, in which flands the city of Quito.

TURALINZES, one of the first colonies which was founded for themselves permanent habitations, when the Tartars subjegated Siberia in the 13th century; hence their name (from Tura, signifying in the Tartar language a town), which signifies the name of Tartars with settlers. Ever since their arrival, they have inhabited the region on both sides of the river, which from them is denominated the Tura, between the Tavda and the Ifer, in the Ekaterinenburg and Tobolok districts of the governments of Perme and Tobolik. Their oldest fixed seat was the city of Tishinghiden; but when Yermak made the conquest of these parts, the khan Yeiapania raised higher up the Tura in a city, which after their restoration by the Russians was called Turenik, and bears this name at present, though it is also called by the Tartars Yaratichina.

TURAMIANA, in Ancient Geography, a town of Spain, in the eastern part of Buttice, S.W. of Urfi. According to the Itinerary of Antonine, it was on the route from Caflulo to Malacca, between Urfi and Murgi.

TURAN, in Geography. See Taraz.

TURANCOURCHY, a town of Hindoostan, in Madura; 12 miles N. of Nattam.

TURANNO, a town of Hindoostan, in Malwa; 18 miles N.E. of Ougain.

TURANO, a town of Naples, in Calabria Citera; 3 miles W. of Bibignano.

TURAPIIUM, Shih-Ellah, in Ancient Geography, a town of Africa, in Mauritania Carierniens, situated in the mountains of the interior, S. of Icofium.

TURATTE, in Geography, a town of the island of Celebes, and capital ef a powerful kingdom; 180 miles N. of Macallar.

TURBA, in Ancient Geography, a town of Novempopulani, belonging to the Aquitains, in Gaul.

TURBAN, TURBANT, the head-drefs of most of the Eastern
Eastern and Mahometan nations; consisting of two parts, viz. a cap, and a fahn of fine linen or taffety, artfully wound in divers plaits about the cap.

The word is formed from the Arabic َخَرَدْ, or َدْرَع, or َخَرَدْ, or َدْرَع, which signifies to encompass, and َمَنَدَد, or َمَلَد, which signifies fasth, or fcarf, or band; so that durband, or turbant, or turbant, only signifies a fcarf, or fasth, tied round; it being the fahn that gives the denomination to the whole turban.

The cap is red or green, without any brim, pretty flat, though roundish at top, and quilted with cotton, but does not cover the ears. About this is wrapped a round piece of fine thin linen or cotton, in several wreaths variously disposed.

There is a good deal of art in giving turbans the fine air; and the making of them up constitutes a particular trade, as the making of hats does among us.

The emirs, who pretend to be descended of the race of Mahomet, wear their turbans green: these of the other Turks are ordinarily red, with a white fahn. The gentel people have frequent changes of turbans. M. de Tournesfort observes, that the turban, all things considered, is a very commodious dress; and that he even found it more easy to him than his French habit.

The grand vizir's turban is as big as a bufhel, and is so exceedingly respected by the Turks, that they dare scarce touch it. It is adorned with three plumes of feathers enriched with diamonds and precious frones; he has a minister on purpose to look to it, called fullmeniocli. See Crown.

That of the grand vizir has two plumes; so have those of divers other officers, only smaller one than another; others have only one, and others none at all. The turban of the officers of the divan is of a peculiar form, and called mogenezek.

The fahn of the Turks' turban, we have observed, is white linen; that of the Perfians is red woollen. Thefe are the distinguishing marks of their different religions; Sophi, king of Perfia, who was of the fect of Ah, being the first who assumed that colour, to distinguifh himfelf from the Turks, who are of the fect of Omar, and whom the Perfians esteem heretics.

Turban, or Claviceo, in Conchology, denotes the aggregate, or whole fect of the whirls of a fhell, and forms its lower part. The flat, or helix turban, is one fo slightly prominent, as to be nearly on a level. There are also the short turban, the produced turban, and the long turban.

Turban-Top, in Botany. See Helvella.

Turban-Shell, Cidaris, in Natural History, the name of a genus of the echnodermata, which are of a hemispheric or fphericoid figure, and have their name from the Latin cidaris, a Perfian turban, as in some degree resembing that head-dres.

Of this there are several genera, and fubordinate species. This class of the echnodermata is made out by the affilance of the foffil, as well as the recent animals; many of the kinds being now unknown on any fhores. Klein's Echinod. p. 17. See Echinodera.

Turba, in Ancient Geography, a fountain of Palestine, at the foot of mount Gilbon, according to William of Tyre.

Turbaria, Turbartia, a right to dig turf in another man's ground; from turba, an old Latin word for a turf.

Turbaria, Common of, is a liberty which fome tenants have by prescription to dig on the lord's waife. See Common.

Turbaria is sometimes also taken for the ground where turfs are digged.

Turbaria Bruria, more particularly denotes flaw-turf, or heath-turf; mentioned in the charter of Hamon de Massy.

Turbed, in Geography, a town of Perfia, in the province of Chorasan; 90 miles S.S.W. of Melfcid.

Turbelia, in Ancient Geography, a town of Hither Spain, situated towards the south, and supposed to be the fame with that which Livy calls Turba.

Turbet, in Geography, a town of Pennsylvania, in the county of Northumberland, containing 2917 inhabitants.

Turbiço, or Turbigo, a town of Italy, in the department of the Olona; 18 miles W. of Milan.

Turbinata Ossa, in Anatomy, turbinated bones; certain bony plates belonging to the nose. See Nose and Cranium.

Turbinated, is a term applied by naturalifts to fshells which are spiral or wreathed, conically, from a larger bif to a kind of apex.

Turbinas, in Natural History. See Turbo.

Turbinis, or Turbinitae, foffil fshells of the turbo kind, or frones found in those fshells.

Turbit, in Ichthyology, the fame with turbot.

Turbit Pigeon, a particular species of pigeon, remarkable for its short beak, and called by the Dutch cort bek, that is, short beak. Moore calls it in Latin columba simbricata; and its English name feems no other than a bad pronunciation of its Dutch one. It is a small and short-bodied pigeon, and has a beak no longer than that of a partridge; the shorter this is, the more the pigeon is esteemed. It has a short round head, and the feathers upon the breast open, and reflect both ways, standing out like the frill of the bofon of a flirt. This is called by many the purle, and the more the bird has of it, the more it is esteemed; the tail and back are generally of one colour, as blue, black, red, yellow, or dun, and sometimes chequered; the flight-feathers, and thofe of all the rest of the body, are white; they are a light nimble pigeon, and, if trained to it, will take very high flights, in the manner of the tumblers.

Turbitth, Turpeth, or Turpethum, a medicinal root, brought from the East Indies, particularly from Cambay, Surat, and Goa; though others will have it, that the true turbitth comes chiefly from Ceylon.

It is the cortical part of the root of a fpecies of convulvalus, vide. the convulvalus turpethum of Linnaeus.

The turbitth of the moderns bears fo little reſemblance to that of the ancients, that it is difficult to fuppofe them the fame. That fold by our druggifts is a longifh root, about the thicknefs of the finger, refinous, heavy, and of a brownifh hue without, and white within. It is brought to us cloven in the middle, lengthwife, and the heart or woody matter taken out. The bark is ponderous, not wrinkled, easy to break, and discoveres to the eye a large quantity of refinous matter.

This root, on the organs of taste, makes at first an impreffion of sweetneſs; but when chewed for some time, betrays a naufeous acrimony. It is accounted a moderate strong cathartic, but does not appear to be of the fakeft or molt certain kind; the refinous matter, in which its virtue refides, being very unequally diffributed; infomuch that, as it is said, fome pieces taken from a fernule to a drachm purge violently, whilft others in larger doses have very little effect. Lewis.

It is commonly fuppofed to take its name turbit from turbar, on account of the violence of its operation, as difturbi;g
turbid the whole economy; and has accordingly been
used in the droopy, palpy, and apoplexy.

It yields a deal of resinous matter in a spirituous
 menstrum, which Quinsey observes does not affect the larger
 passages much; but is very active in the smaller vessels, and
 glandular contortions, which it wonderfully clears of all
 viscid adhesions.

Some apothecaries, either through ignorance or parsi-
mony, substitute white thapia, which they call grey turbit,
or turbit glandularum, for the true turbit; though both as to
 taste, colour, and qualities, they are very different.

_Turbit_ Mineral, _Tartaricum Minerales_, is a name
which the chemists give to a yellow precipitate of mercury,
now called yellow sub-fulminate of mercury.

For the method of preparing it, see HYDROGYPHY Sub-
sulphur flavus.

Turbit mineral may also be made by precipitating mer-
cy from its solution in nitrous acid by means of vitriolic
acid, or of some vitriolic salt. For this purpose the nitrous
acids must be well saturated with mercury.

We may observe that turbit mineral becomes yellow
only by being deprived of the adhering vitriolic acid, and
that it remains white till it has been washed with a large
quantity of water; and, in general, the more perfectly it is
deprived of acid, the deeper yellow colour it acquires.

Some chemists have supposed, that a portion of vitriolic
acid remaining united with the turbit, though not enough to
render it soluble in water: M. Beaume affirms, that when
sufficiently washed it contains no acid; but the latter
experiments of M. Bayen prove the contrary.

This powder is called mineral turbit, from the re-
semblance it bears to the vegetable turbit of the Arabians,
in strongly purging the most internal receisses of the body;
for though it be impudent upon the tongue, yet it is beneficial
of very considerable virtues. Being boiled with water, it
loses more of its salts, and thereby grows milder, and more
safe; so it does also by being dephlegmated twice or thrice,
or distilled with spirit of wine.

The powder, prepared in the manner above described,
proves, though not corrosive, strongly emetic; operating,
in this intention, the most effectually of all the mercurials
that can be given with safety. It is used chiefly in virulent
gonorrhoeas, and other venereal cafes accompanied with a
great flux of humours to the parts: it is said likewise to
have been employed with success in robust constitutions,
against leprous disorders, and oblitrate glandular obstruc-
tions.

The dose, as an emetic, is from two grains to fix
or eight; though some constitutions, habituated to mercurials,
can bear larger quantities. It may be given in smaller
doses, as half a grain or a grain, as an alternative, after
the same manner as the red calc of mercury; and even
when intended as an evacuant, it may perhaps, as Malouin
observes, be more advisable to give only a small quantity at
a time, as one grain, and repeat the dose every hour till the

Art. Turbit mineral.

Turbit mineral appears to have been the grand secret of
Paracelsus, which, in his scarce German book of hospital
medicines, he praises so extravagantly for the venereal and
all chronic diseases. Sydenham also commends it in
venereal cafes, given in the quantity of fix or eight grains,
in strong habits of body, as to prove emetic; but when
imprudently used, it is apt to bring on a dysentery.

Turbit mineral has been used as a fermentary, and is
said to have made wonderful cures in distempers of the eyes.
Mr. Boyle relates a cure of this sort, performed by the
famous empiric Adrian Glass-maker on Mr. Vatteville, a
Swiss officer of distinction in the French service, and totally
blind. This gentleman was ordered to suck about a grain
of turbit up each nostril, which immediately operated in a
violent manner, by vomit, rood, sweat, salivation, and the
lacrymal glands, for twelve hours together; and also caused
his head to swell greatly; but within three or four days
after this single dose had done working, he recovered his
sight. Boyle's Works, Abr. vol. i. p. 103.

We read of this preparation being given to the quantity
of ten grains, with the fame quantity of camphor, and in-
fections of the whole body, of the pilul. ex duo. to remove the swelling of
the testicles. This medicine, which in the beginning vom-
ited and purged, at last operated chiefly as an alterative.
It is said to be successful in oblitrate venereal and febrile

Turbit mineral is an efficacious bright true yellow, of
a great body like vermillon; will stand equally well, and
work with oil or water much in the fame manner. The
qualities (says the author of the Handmaid to the Arts,
vol. i. p. 105.) render it very valuable for many purporses;
as it is much brighter than any other yellow used in oil, ex-
cept king's yellow, and is free from its nauseous smell, and
cooler. Mixed with Prussian blue it yields a much finer
green than from the king's yellow without ultramarine. As
it is now procured, it requires levigation in water before it
be used.

_Turbo_, in the Linnean System of Zoology, is a genus of the
Tetacea order of worms. Its characters are: that its
animal is a flag; the shell univalve, spiral, and solid; and
the aperture straightened, orbiculated, and entire. Gmelin,
in his edition of Linnaeus, enumerates one hundred and
seventeen species, besides several varieties. See _Turbo_ under the
article Conchology.

In Da Colta's system, the turbo is a genus of shells, with a
lengthened clavicle or turban; which have generally a per-
fet round mouth; the columella, or inner lip, not much
faced outwards, and the body spher very belled, so that the
turban is suddenly, and not inensiblement, produced from it. See
_Shells_.

The most remarkable species of the turbo, or screw-shell,
is that called _practice_ by Rumphius, from its spires running
up hollow, or with a space between them. This is a very
scarce and valuable shell when large, but is often found small
in the Adriatic.

Aldrovand, and many others of the old authors, make
no difference between the turbinates and screw-shells, though
the distinction of the genera is very obvious; the screw-
shells having a long, large, and dentated mouth, which ter-
minates towards the base in a narrower aperture than else-
where; and the shell itself always runs to a very sharp point
at the end: whereas the turbinates terminate in a less sharp
point, and have thicker bodies, and always much wider
mouths. The screw-shells are indeed very easily confounded
with the Buccinum; and it requires more accuracy to dinstin-
guish them, than has fallen to the share of the generality
of writers on these subjects an age or two ago. Aldrovand
and Rondellet have confounded these genera, and have
brought in a third among them, by the epithet _muricatum_,
which, when applied to the Buccinum, is generally observed
to bring into that family a shell of the murex clas, and
which might have been very properly called by that short
name.

For the sake of distinguishing these, it may be observed,
that the screw-shell is of a very long and slender shape, ter-
minating in a very sharp point, with its spires running an
imperceptibly, without any great cavity, and the base small
and flat, as well as the mouth.

_Turbo_
Turbo Cochlea, in Natural History, a name by which some authors have called the Perian shell, a species of concha globosa, or dolium.

Many have been puzzled with this shell, not knowing in what clafs to rank it; and Aldrovand has placed it at the end of his work, saying, that it would seem to belong to the turbinated kinds, but that it wants the turbo.

TURBOT, in Ichthyology, a name given to the fish which, in the sytems of Artedi and Linneaus, is a species of pleuronectes, being the pleuronectes of the former, with the eyes on the left side, and a rough body, and the pleuronectes maximus of the latter, and the rhombus maximus after non fquamofus of Ray. See Pleuronectes Maximus.

Turbots grow to a large size, some of them weighing from twenty-three to thirty pounds. They are taken chiefly off the north coast of England, and others off the Dutch coast. The large turbots (as well as several other kinds of flat fish) are taken by the hook and line, for they lie in deep water; the method of taking them in weirs, or flaked nets, being very precarious. When the fishermen go out to fish, each person is provided with three lines, which are coiled on a flat oblong piece of wicker-work; the hooks being baited, and placed regularly in the centre of the coil. Each line is furnished with fourteen fores of hooks, at the distance of fix feet two inches from each other. The hooks are fastened to the lines upon flews of twisted horse-hair, twenty-seven inches in length. When fishing, there are always three men in each coble, and consequently nine of these lines are fastened together, and used as one line, extending in length near three miles, and furnished with 2520 hooks. An anchor and a buoy are fixed at the first end of the line, and one more of each at the end of each man's lines; in all four anchors, which are common perforated flones, and four buoys made of leather or cork. This line is always laid across the current. The tides of flood and ebb continue an equal time upon our coast, and, when undisturbed by winds, run each way about fix hours; they are so rapid that the fishermen can only shoot and haul their lines at the turn of tide, and therefore the lines always remain upon the ground about fix hours; during which time the myxine glutinosa of Linneaus will frequently penetrate the fish that are on the hooks, and entirely devour them, leaving only the skin and bones. The fame rapidity of tides prevents their using hand-lines; and therefore two of the people commonly wrap themselves in the sail, and sleet while the other keeps a strict look-out, for fear of being run down by flips, and to observe the weather. For ftons often rife fo suddenly, that it is with extreme difficulty they can sometimes escape to the shore, leaving their lines behind. Besides the coble, the fishermen have also a five-men coble, which is forty feet long, and fifteen broad, and of twenty-five tons burthen; it is fo called, though navigated by fix men and a boy, because one of the men is commonly hired to cook, &c. and does not share in the profits with the other five.

This boat is decked at each end, but open in the middle, and has two large lug-fails.

All our able fishermen go in these boats to the herring-fifhery at Yarmouth, in the latter end of September, and return about the middle of November. The boats are then laid up till the beginning of Lent, at which time they go off in them to the edge of the Dogger, and other places, to fish for turbot, cod, ling, skates, &c. They always take two cobsles on board, and when they come upon the ground, anchor the boat, throw out the cobsles, and fish in the fame manner as those who go from the shore in a coble; with this difference only, that here each man is provided with double the quantity of lines, and instead of waiting the return of the tide in the coble, return to their boat and bait their other lines; thus hawling one set, and fishing another every turn of tide. They commonly run into harbour twice a week to deliver their fish.

The best bait for all kinds of fish is fresh herring cut in pieces of a proper size; the five-men boats are always furnished with nets for taking them. Next to herrings are the lefter lamprey. The next baits in esteem are small haddocks cut in pieces, sand-worms, and limpets, here called flidders, and when none of these can be had, they use bullock's liver. The hooks are two inches and a half long in the shank, and near an inch wide between the shank and the point. The line is made of small cording, and is always tanned before it is used.

Turbots, and all the rays, are extremely delicate in their choice of baits; for if a piece of herring or haddock has been twelve hours out of the sea, and then used as bait, they will not touch it. Pennant's Brit. Zool. vol. iii. p. 234, &c.

TURBOWKA, in Geography, a town of Russia, in Poland; 32 miles S.E. of Zytomiers. TURBUNNY, a town of Napaal; 60 miles S.W. of Catamandu.

TURCAE, in Ancient Geography, the name of a people who inhabited the environs of the Palus Gothfeldes, according to Pomponius Mela. See Turk.

TURCHANS, or ROOHANS, in Zoology, a kind of wild horses in the great desert about Azof. They are higher than the tarfants, (which fee,) mofs-grey in colour, with long upright standing ears, their manes and tails thinner and shorter than the common breed, their coats long and thick. They feed by thousands together in one taboon. The Khirges Rhaiflaks shoot them with guns, and eat them.

TURCICA SELLA. See SELLA.

TURCICA Terra, Turkey Earth, in the Materia Medica, a very fine bole or medicinal earth, dug in great plenty in the neighbourhood of Adrianople, and used by the Turks as a sudorific and astringent, and famous among them in pellential diseases. It is sometimes brought over to us also made up into flattish orbicular maffes, of two or three drachmes weight, and sealed with some Turkifh characteres. The earth is of a somewhat lax and friable texture, yet considerably heavy, of a greyish-red colour, but always redder on the surface than within; extremely soft, and naturally of a smooth surface. It breaks easily between the fingers, and melts freely in the mouth, with a considerably strong astringent taffe. It adheres but slightly to the tongue, raifes no effervescence with acids, and burns to a dually yellow colour. Hill.

Many authors who have written of the materia medica, and of foftils in general, have indiscriminately called the various kinds of Lennian earth by this name; but the true terra turcica, defcribed by Schroder, Wormius, &c. is a different substance, though not sufficiendy characterised by those authors to distinguish it from all the other earths.

TURCKHEIM, in Geography, a town of Germany, in the lordship of Mindelheim; 6 miles E. of Mindelheim. —Alfo, a town of France, in the department of the Upper Rhine, formerly imperial; 3 miles W. of Colmar.

TURCKHEIM Rhein, a town of France, in the department of Mont Tonnerre; 4 miles N. of Worms.

TURCO, a town of Peru, in the diocefe of La Plata; 60 miles E.N.E. of Atacama. S. lat. 20° 30'. W. long. 68° 20'.

TURCOCORIA, a town of Europea Turkey, in Livadia; 14 miles N. of Livadia.

TURCOIN,
TURCOIN, a town of France, in the department of the North, and chief place of a canton, in the district of Lille. The unfortunate conflict between the French and the duke of York, who commanded the allies, may be said to have decided the fate of the Netherlands; 6 miles N.E. of Lille.

TURCOIS, or Turquois, in Natural History and Mineralogy, a substance found in Persia and other parts of Asia, and formerly classed with stones. It has a beautiful light-green colour, and is susceptible of a high polish. The surface is smooth and polished; it has also a smooth shining fracture, and is so hard as to scratch glass slightly; the specific gravity is 3.127. It has for a long time been considered as the tooth of an unknown animal impregnated with copper; but by a series of analytical experiments, La Grange has proved that it does not contain a particle of copper, but is in reality bone coloured by phosphate of iron. The constituent parts are as under:

- Phosphate of lime - 80
- Carbonate of lime - 8
- Phosphate of iron - 2
- Phosphate of magnesia - 2
- Alumina - 1
- Water - 6

Guyton Morveau suspected that the turcois contained felsile, but this is supposed by others to have been accidental. This celebrated chemist made some experiments on fossil bones, and found that they assume in the fire the colour of turcois; and when digested in a weak solution of potash, they turn blue, varying from a greenish to deep blue. Mellan, Fourcroy and Vauquelin have also observed that bones strongly calcined often assume a blueish tinge, which they considered to be caused by a small portion of phosphate of iron.

Turcois is employed in jewellery. See Gems.

The Greeks and Latins seem to have known it under the name callais; and it appears to have had a place in the rationale of the high-priest of the Jews.

Some writers mention turcoises both oriental and occidental, of the new rock and of the old. The oriental partakes more of the blue tincture than the green; and the occidental, more of the green than the blue. Those of the old rock are of a finer blue, and those of the new rock are often whitish, and do not keep their colour.

The oriental ones come from Persia, the Indies, and some parts of Turkey; and some even Suppose, that it is hence they derive their modern name turcois. The occidental are found in various parts of Europe, particularly in Germany, Bohemia, Silezia, Spain, and France.

Turcoises are found of a round or oval figure; they cut easily, and besides teeth, which are frequently engraved on them, some are formed into crucifixes, or other figures, near two inches high; though De Boedt mistookly affirms, that none have been known to exceed the bigness of a walnut; for the specimen exhibited by Mr. Mortimer to the Royal Society was twelve inches long, five inches broad, and in some places near two inches thick.

The turcois is easily counterfeited; and that often is done so perfectly, that it is impossible to discover the deceit, without taking it out of the collet.

In the Memoirs of the Academy of Sciences for the year 1715, we have a very curious account of the formation of the turcois, and the manner of managing its naturally irregular colour, by M. Reaumur. The turcois, he observes, is one of the most durable of precious stones, its hardnefs usually not coming up to that of a crystal, or a transparent pebble; though some are much harder than others; and still the harder, ceteris paribus, the more valuable, by reason of the vivacity of the polish, which is always proportionable to the hardnefs.

Reaumur, a jeweller, and the author of a scarce treatise, called Mercure Indien, cultivating the several precious stones, sets a hard turcois, whose blue is neither bright nor deep, on the foot of the most perfect emeralds, that is, nearly on a level with a diamond; but such are rarely ever met with. Those with any defect, he only values at a French crown the carat.

Tavernier affirms, but erroneously, that there are but two mines of turcoises known in all the earth, and those are both in Persia; the one called the old rock, near a town called Nisabour, three days' journey to the north-east of Meshed; the other, called the new rock, is five days' journey from it. The stones from the latter, he adds, are but little valued; and the king of Persia hath for many years prohibited the digging in the former for any but himself. M. Reaumur takes the old rock to be now exhausted; in effect, the common division of turcoises into the old rock or oriental, and new rock or occidental, is very arbitrary and precarious. All the best, and most perfect, wherever they occur, in India or Europe, are reckoned among the former, and the rest among the latter. Near Simore, in the Lower Languedoc, there are several considerables mines of turcoises; but that fine blue colour, admired in the turcois, is not natural to those of these rocks; the prevailing colour being sometimes white, and sometimes much like that of tripoli of Venice. Other precious stones are dug out of the mine with all their colour, to the force of which nothing can be added, though it may frequently be diminished, as we see fire bring down the too deep colour of the sapphire, and quite take away that of a pale sapphire: these turcoises, on the contrary, are naturally whitish or yellowish, of a colour as ordinary as that of a free-stone; and by opposing them for some time to the action of the fire they assume a blue colour.

It seems a paradox, and yet M. Reaumur has attempted to prove, that turcoises are originally the bones of animals. In the mines in France, pieces have several times been found in the figure of teeth, bones of the legs, &c. And turcoises which are yet imperfect, or half-formed, are apparently composed of laminæ, or leaves, like those of bones, between which some petrifying juice, iniminating itself, binds them close together; and still, the softer, the more imperfect the stones are, the more distinguishable are the different directions of the fibres and laminæ, with their interlacements, and the great resemblance they bear to fractured bones, and the laths to any kind of stones known.

To give them a blue colour, they dry them awhile in the air, then heat them gradually in a furnace made after a particular manner. If they are heated too hastily, the humidity between the laminæ wanting time to evaporate, the whole will separate into scales or flaws. Some of the stones require a greater degree of heat to bring them to their colour than others; and even in large pieces, the several parts ordinarily require several degrees of heat.

On this account a great deal of care is to be taken in the heating of them; for the fire, which gives them their blue by degrees, if they be exposed beyond a certain degree, takes it away again.

M. Reaumur accounts for their taking a blue colour by heat very well; when fresh cut out of the rock, it seems their substance is found sprinkled and streaked all over with spots, veins, little circles, &c. of a dark blue colour; these he takes to be sources of a deep blueish matter, which the fire rarefying,
rarefying, spreads and diffuses throughout the whole substance of the stone. This matter, again, he concludes to have been either originally the juice contained in the bones, since mixed and coagulated with the petriflying juice, or some other mineral matter insinuated into the pores of the stone.

According to M. Reaumur's Mem. Par. 1715, nitrous acid will not disolve that of Persia, though it will that of France, which shews a difference between them.

Dr. Woodward maintains, that the turcois, or callais of Pliny, is nothing else but fossil ivory tinged with copper; but Mr. Mortimer, who produced a specimen of the turcois to the Royal Society, is of opinion, that those which authors call stones of the old rock, and in which the colour is permanent, are real mineral stones; the form and size of the sample which he produced evincing this; for its shape shews that it could not be part of any animal bone, but its botryoid form seems to prove, that it is the product of fire, which has once melted this substance, and that when it cooled, its surface was formed into blisters and bubbles, in the same manner as the hematites botryoids, or blood-stone, whose surface consists of knobs, resembling a bunch of grapes. He apprehends the elphias spectus, or ebull sulphure of Theophrastus, to be what Dr. Woodward calls the turcois, and suspects that it is what De Boole calls the new rock. He thinks that, for distinction sake, all these stones of ivory origin should be called pseudo-turcois, or bastard turcois. By a chemical analysis he concluded, that his stone was a rich copper ore; some of it powdered and dissolved in spirit of hartthorn gave a deep blue; in aqua fortis, a fine green; and an iron wire put into it was in an hour's time incrusted with copper; some of it, being calcined without any flux in a crucible, ran to a slag of half-vitrified substance; whereas the same heat, if it had been ivory or bone, would have reduced it to a white ash, like bone-ashes, for it was exposed to a fire that vitrified the tile which covered it. Its hardness and confidence to an engraver's tool seemed to be the same as that of common white marble; its colour was not improved by heat, and it became brittle when red-hot.

Sir Hans Sloane had several specimens of these oriental turcoises, which are all botryoid, and seem to be copper ores; and in his museum there are also samples of turcoises from Spain and the south of France, which are small, and seem to be pieces of ivory tinged with copper. Phil. Trans. vol. xliv. art. 17.

The great defect of turcoises in general, is, that in time they lose their blue colour, and become green; and then cease to be of any value.

The pale blue of the natural turcois gem, is a very favourite colour in the glais-trade, and is given to glais in the following manner. First calcine common sea-felt, and beat it into fine powder; then make a pot of the sea-green glas, of a fair and full colour; to this, when in fusion, throw in at times the powder of salt, till the mass has lost all its tranparency, and is become paler and opaque; then add, by very small quantities at a time, more and more salt, till the colour is exactly that of the turcois gem; and when it is so, work it immediately, for the salt is soon burnt off, and the glas becomes transparent, and of its green colour. If it become transparent while working, more salt must be thrown in, and that will reduce it to the same opacity again. Neri's Art of Glais, p. 57. See Glass.

For making a paste resembling the turcois, see Paste.

TURCOMANIA, in Geography, that part of Armenia which belongs to the Turks.

TURCOMANS. See Turkomans.
brown; quill-feathers and tail black; chin and throat white, frizzled with brown; breast cinereous; abdomen white. The Jamaica thrush of Latham.

G U I A N E N S I S. Above greenish-brown, underneath ochre-coloured, with black longitudinal flake. The Guiana thrush of Latham.

M U S I C U S. With quill-feathers at the inner base ferruginous. The Mavis thrush or song-thrush of Ray, Willughby, Pennant, and Latham. Found in the woods of Europe, imitating in the mornings the song of the nightingale, and continuing it for almost nine months. Of this there are three varieties.

O L I V A C E U S. Brownish; beneath yellow. Found at the Cape of Good Hope.

I N D I C U S. Olive-coloured; bill and legs blackish; quills brown on the inner side. The Indian thrush of Latham; so called because it is found in India.

C I N E R E U S. Ash-coloured, with the two intermediate tail-feathers cinereous; the next on both sides black at the margin, and cinereous at the apex; the ruff black. The ash-coloured thrush of Latham. Found in India.

M I G R A T O R I U S. Grey; abdomen red; eye-lids white; the external tail-feather white at its interior apex. The American fieldfare of Forster, and red-breasted thrush of Latham. Found in North America, from Hudson’s Bay as far as the bay of Natka and Carolina.

T R I C H I A S. Olive-coloured; the body beneath yellow; the ocular band black. The Maryland yellow-throat of Edwards, and the yellow-breasted warbler of Pennant and Latham. Found in summer in the most low lands of Carolina, Maryland, and Pennsylvania.

C A N O R U S. Brown; beneath ferruginous; with a white line on the sides of the head, and a rounded tail. The crying thrush of Latham. Found in Bengal and China.

R U F U S. Red; beneath spotted whitish, with quill-feathers of the same colour; the tail rounded and red. The ferruginous thrush of Pennant and Latham. Found in America, from Newfoundland to Carolina.

P O L Y G L O T T U S. Obfuscely ash-coloured; beneath paler ash-coloured, with the greater quill-feathers white on the exterior half. The singing-bird, mocking-bird or nightingale of Sloane, the mock-bird of Catesby and Kalm, and the mimic thrush of Pennant and Latham. Found in Jamaica, and the mossy woods of America, practising in the way which its name imports.

O R P H E U S. With brown back; breast and lateral wing-feathers whitish; eye-brows white. The polyglott bird of Willughby, the lesser mocking-bird of Edwards, and the mocking-thrush of Latham. Found in Jamaica, and the warmer parts of America. It has two varieties.

S A N D W I C H I E N S I S. Above and abdomen brownish; beneath and front cinereous-white. The Sandwich thrush of Latham. Found in the Sandwich islands.

P A C I F I C U S. Above cinereous; beneath brownish-white; the lori black; the tail black, with a white tip. The Pacific thrush of Latham. Found in the Friendly islands.

S U R A T E N S I S. With the head somewhat crested; the neck, tail, and greater quill-feathers and legs black; the body above amber-coloured; beneath dirty-grey; the wing-coverts and second quills green. The Surat thrush of Latham: named from its habitat.

P H I L I P P E N S I S. Above olive; neck and breast red, spotted with white; abdomen and vent ochre-coloured. The Philippine thrush of Latham; so called from the islands which it inhabits.

S H A N B U. With chin, throat, and the ocular area black, with a large white streak at the ears; the rest of the head, neck, breast, and abdomen grey; the back and wings greenish-brown. The black-faced thrush of Latham. Found in the woods of China.

N O V E H O L L A N D I E. Blueish lead-coloured; the anterior part of the head, the bill, chin, throat, and legs black; the quill and wing-feathers black, with lead-coloured margin; the intermediate white at the apex. The New-Holland thrush of Latham.

P L U M B E I S. Black, with yellow axilles, and cuneated tail. The red-legged thrush of Pennant and Latham. Found in North and South America, and in the Bahamas islands.

C R A S S I N O R I S. Above from red, and beneath from black, with the quill-feathers acuminated; the two intermediate obscure. The thick-billed thrush of Latham. Found in New Zealand.

U L I E T E N S I S. From red to brown; quill-feathers black at the margin, and roundish tail black. The bay thrush of Latham. Found in Ulitea.

P A L L I D U S. From yellowish to ash-coloured; beneath whitish; tail-feathers from cinereous to brown; the side ones white at the apex. Pale thrush of Latham. Found in Siberia, beyond the lake Baikal.

S I B I R I C U S. Black, with yellow mouth; eye-brows and space under the wings white. White-browed thrush of Latham. Rare in the alpine and more northern woods of Siberia.

R U F I C O L L I S. Above brown, below snow; neck and equal tail-feathers red; the two intermediate cinereous. Red-necked thrush of Latham.


P H E N I C U L U S. Above olive, with white eye-brows; ocular band black; tail-feathers and two intermediate quills fimbriate; sides with throat and breast red. The red-tailed thrush of Latham. Found at the Cape of Good Hope.

R U F I C A U D U S. Above olivaceous; beneath purplish and white; tail-feathers and quills black; sides for the most part red. The rufous-tailed thrush of Latham. At the Cape of Good Hope.

M A L A R A R I C U S. Ash-grey; beneath red-brown; bill and tail-feathers black; legs yellow. The Malabar thrush of Latham. Found in Malabar.

P A G O D A R U M. Black; back and rump grey; vent white; head crested. The pagoda thrush of Latham. Found in Malabar and Coromandel.

C A Y E N N E N S I S. Cinereous; beneath whitish; vent white; greater wing-feathers and tail-feathers black; throat, bill, and legs black. The Cayenne thrush of Latham.


S T R I A T U S. Varied with yellow and grey; a longitudinal streak of the back yellow. Yellow-backed thrush of Latham. Found in Surinam.


M U S T E L I N U S. Beneath white, spotted with black; cheeks brown, spotted with white; rump and greater quills acuminated, and tail-feathers brown. The tawny thrush of Latham. In New York.

C A N T S C H A T E N S I S. Brownish; beneath from brownish to white; eye-brows pale; chin and throat carpyllous-coloured. Kantschata thrush of Pennant and Latham. Found in Kantschata.
NAEVUS. With head and pectoral band black; break from the eyes to the hind part of the head ferruginous; body above cinereous; beneath ferruginous. The varied thrush of Pennant, and spotted thrush of Latham.

HUDSONICUS. From blueish to cinereous; bill and legs black; feathers of the crown, nape, wing-covers and primary quills pale at the margin, red. The Hudsonian thrush of Pennant. Found in Hudson’s Bay.

NOVEDRACENSIS. With head, neck, and breast varied from black, and dilutely ferruginous; feathers of the back ferruginous at the margin; with double band above and below the eye, wings, and roundish tail shining-green, and legs black. The New York thrush of Pennant. Found in North America.

CURACUS. Shining-black; bill sub-friated, and tail cuneated. Found in Chili.

NITENS. Green; spot on the wing-covers violet. Shining thrush of Latham. Of this there is a variety, the green merula; beneath violet, throat and rump blueish. Found in Angola, and at the Cape of Good Hope.

ÆNEUS. Shining-green; beneath brassy; head blackish to shining-gold; rump and intermediate tail-feathers purplish; tail wedge-formed. Gloppy thrush of Latham. Found in Senegal.

AURATUS. Violet; back and wings green-gold; band of the wings at the internal margin and tail, with the superior wing-covers, blue. The gilded thrush of Latham. Found at Whidah, in Africa.

LEUCOGASTER. Violet; with white belly; blackish quills; bill and legs cinereous. The Whidah thrush of Latham.

ROEUS. Subincarnate; head, wings and tail black; occiput crested. Merula rosea of Aldrovand, Ray, and Biffon; rose or carnation-coloured ouzel of Pennant, Williamsby, and Edwards; the rose-coloured thrush of Latham. Found in various parts of Europe, Siberia, and Syria, migrating in flocks, and feeding chiefly on locusts.

LEUCURUS. Black; rump and tail white; tail-feathers black at the apex. White-tailed thrush of Latham. Found about Gibraltar.

CAFER. Blackish; somewhat crested; rump and belly white; vent red. Cape thrush of Latham. Of this there is a variety, the merula above brownish to cinereous; striated brownish; beneath hoary. Found in China, and at the Cape of Good Hope.

MACROURUS. From purplish to shining-black; beneath from ferruginous to yellow; rump and three tail-feathers on both sides exteriorly white. The long-tailed thrush of Latham. Of this there is a variety with the two intermediate tail-feathers black; the rest half white. Found in Pulo Condore and Malabar.

AMOENIS. Spadiceous; beneath yellow; secondary quill-feathers yellowish from the base to the middle; tail euniform; beneath yellow. The Amboine thrush of Latham.

BORONICUS. From cinereous to olive; black crown; abdomen and vent from olive to yellow; tail brown, with two obsolete bands towards the apex. The Bourbon thrush of Latham. Found in the island of Bourbon.

OCHIOCEPHALUS. With the larger quill-feathers, tail, and legs green; vertex and cheeks yellowish; collars black; abdomen and breast cinereous; the latter varied with agitated spots. The yellow-crowned thrush of Latham. Found in Ceylon and Java.

ORIENTALIS. Black; beneath white; rump cinereous; ocular band black; three tail-feathers on both sides externally white. Ash-rumped thrush of Latham. In India.

NIGERRIMUS. Wholly black; feathers yellow at the margin; cheeks and throat holosericous. The black-cheeked thrush of Latham. Found in Madagascar.

HISPANIOLENSIS. Olive-coloured; beneath varied from olive to grey; brown tail-feathers, whitish at the interior margin, olive at the exterior; with the intermediate altogether olive. The Hispaniola thrush of Latham.

ALBIFRONS. From black to lead-coloured; beneath yellowish; with the spot on the front white; and brown legs. The white-fronted thrush of Latham. There is a variety black; beneath white, tail beneath cinereous. Found in New Zealand.

CAPENSIS. Brown; abdomen yellowish; vent yellow. A variety has the head and tail black. Found at the Cape of Good Hope.

ATRICAPILLUS. Brown; black head; abdomen and rump red; spot on the wing white. Found at the Cape of Good Hope.

MAURITIANUS. From greenish to deep blue; the feathers of the head and neck narrow and long; bill cinereous; and legs lead-coloured. The Mauritian thrush of Latham.

MINDANAENSIS. Steel-coloured; beneath white; the longitudinal band of the wings white; tail subcuneated. The Mindanao thrush of Latham.

MADAGASCARIENSIS. Brown; abdomen and vent white; tail subfuscated; two intermediate tail-feathers wholly, and the rump at the external margin green-gold; the exterior margin of the outmost on both sides white. The Madagascar thrush of Latham.

SENECALENSIS. From grey to brown; abdomen whitish; bill, tail-feathers, tail and legs brown. The Senegal thrush of Latham.

LONGOSTRIS. From olivaceous to pale-brown; beneath pale sulphureous; rump and eye-brows yellowish; tail round and yellow; intermediate tail-feathers brownish. The long-billed thrush of Latham. Found in the islands of Eimeo and York.

GREIUS. Grey; crown and neck whitish; breast, abdomen and vent from very pale red to grey. The grey thrush of Latham. Found in Coromandel.

PALMARUM. Green-olivaceous; beneath sub-cinereous; black head, with three white spots on each side. The palm thrush of Latham. There is a variety, viz. merula palmarum atricapilla; found among the palms of Cayenne.

MONACHA. Above yellow, with brown; beneath yellowish; black head; terminating with black on the breast acetly. The nun thrush of Latham. Found in the woods of Abyssinia.

ÆTHIOPICUS. Black; beneath white; with a transverse white band on the wings; tail round, tail-feathers quadrated at the apex. The Ethiopian thrush of Latham. Found in the thick woods of Abyssinia.

ABYSSINICUS. Brown; beneath yellow; brownish throat, and black legs. The Abyssinian thrush of Latham.

COCHINCHINENSIS. Green; with blue spots on both sides at the base of the bill; face, chin, and throat black; the latter encompalTed with a yellow arc. Found in Cochinchina.

CINAMOMEUS. Beneath more diluted cinnamon; throat, legs, temples, checks, chin, covers of the wings, and breast black; with white nebulous wreath. The black-breasted thrush of Latham. Found in Cayenne.

RUPIFRONS. Brown beneath, and the front and temples red; vent white; tail and legs cinereous. The rufous thrush of Latham. Found in Cayenne.

CANTANS. From red to brown, varied with transverse black or blackish streaks; beneath whitish; chin, checks, and
and throat from red to orange; with black area, spotted with white on both fides of the neck. Mu[cion thrufh of Latham. In the recesses of the for[eets of Cayenne.

Coraya. Red-brown; beneath more diluted; vertex and fides of the head and neck black; tail grey, varied with blackish lines. The barred-tailed thrufh of Latham.

Fuscipiers. Cinereous; beneath red; vertex black; legs and tail-feathers brown; tail sub-cuteneate. The buff-winged thrufh of Latham; fupposed to be found in Cayenne.

Alapi. From olive to brown; throat and breast black; abdomen cinereous; tail wedge-formed, blackish. The white-backed thrufh of Latham. In Guiana.

Cirrihatus. Cinereous, with wedge-formed tail, white at the margin and apex; cremated crown; throat varied with white and black; breast black. The black-crested thrufh of Latham. Found in Cayenne.

Tintinnabulatus. Vertex and temples white, spotted with black; eye-brows black; chin white; incarnated breast spotted with black; back, wings and tail brown; rump, abdomen and vent from red to orange. The chinning thrufh of Latham. Found in Cayenne and Guiana.

Bambula. Spotted; above from red to brown; beneath cinereous; wings black; with a white tranfive band. The black-winged thrufh of Latham. Found in Cayenne.

Auritus. Varied from red and olive-coloured; beneath white; vertex and wreath from red to brown; chin and throat black; feathers near the eyes, and at the fides of the neck, fshing-white; elongated and more wide. The white-earred thrufh of Latham. Found in Cayenne.

Colma. From red to brown; beneath cinereous; chin and throat white, spotted with black; breast from grey to brown. The rufous-napped thrufh of Latham. It has a variety from black to brown; the occiput and neck red. Found in Cayenne.

Tinniens. Above brown; beneath white; breast spotted with black; equal tail. The alarum thrufh of Latham. Found in Cayenne.

Lineatus. From olive to brown; chin, throat and breast white; the latter spotted with brown; the fides of the neck marked with white lines. The speckled thrufh of Latham. Found in Cayenne.

Formicivorus. Above from red to brown; beneath cinereous; chin, throat, and breast black; band varied with white and black. The ant thrufh of Latham. Found as the former.

Cyannus. Spadiceous; beneath varied with blue and yellow tranfive alternate freaks; vertex at the nape to the quill-feathers and ocular band black; another orange; pectoral band and wedge-formed tail blue. The blue-tailed thrufh of Latham. In Guiana.

Rex. From red to brown; beneath more dilute; oc[ciput lead-coloured; front varied from white to brown. The king thrufh of Latham. Found in South America, particularly Guiana and Brasil.

Sinensis. Reddish; head brown ftriated; white eye-[brows; tail-feathers marked with obscure brown freaks, and legs yellow. The Chinese thrufh of Latham. Found in China.

Arcuatus. Above spadiceous; with eye-brows, col[lars, chin and vent white; cheeks and bow of the throat white; tail rounded, black towards the apex; apex white. The cresent thrufh of Latham. Found in China.

Melanopis. Grey; back and wings from green to brown; orbits, chin, and throat black; spot on the ears white. The black-faced thrufh of Latham. In the woods of China.

Violaceus. From violet to blue; feathers of the head, neck, breast, and covers of the wings fteel-faciated at the apex; bill and legs black. Found in China.

Leucocephalus. Grey; black quill-feathers; the fifer with the covers of the wings and tail green-brayly and fshing-violet. The white-headed thrufh of Latham. In China.

Nigriceps. Brown; head, chin and nape white; ocular band and breast yellowish; neck, back and tail-feathers black; tail wedge-formed, lead-coloured. The black-necked thrufh of Latham. Found in China.

Bulul. Of the colour of terra umbra; longitudinal band near the eyes black. The chanting thrufh of Latham. Found in the southern part of China.

Perspicillatus. With head and neck cinereous; front and ftrake under the eyes on both fides black; body above from greenish to brown; beneath ochreous. The spectacle thrufh of Latham. In China.

Flavus. Yellow; white orbits; band from upper mandible produced near the eye black; bill and legs red. The yellow thrufh of Latham. In China.

Viridis. Green; with eye-brows, spot below the eye, abdomen and vent white; throat grey, spotted with white; breast reddish. The green thrufh of Latham. In China.

Atra. From grey to brown; beneath from greenish to yellow, spotted with black; bill, legs, front, face, chin, and throat black; the latter with a red margin. The black-throated thrufh of Latham. In the island of St. Domingo.

Dominicus. Brownish; beneath white; with the principal tail-feathers white at the base; the three outer tail-feathers white. The St. Domingo thrufh of Latham. Found in St. Domingo and Jamaica.

Brasiliensis. Black; beneath from ferruginous to yellowish; rump ferruginous; tail sub-cuteneate; outermost tail-feathers wholly, the rest at the apex, white. The yellow-bellied thrufh of Latham. Found in Brazil.

Merula. Black; with bill and eye-bids yellow. The blackbird of Pennant, Ray, Willughby, and Latham. Of this there are the varieties of merula leucocephala of Buffon, merula varia of the fame, or pied blackbird of Albinus, and merula alba of Baffon. Found in the woods of the temperate parts of Europe.

Aurantius. From blackish to brown; throat and abdom[en whiti; bill and legs orange-coloured. The thrufh of Sloane and Ray; the white-chinned thrufh of Latham. The varieties are, merula gula fusca, merula nigra, and merula americana. Found in the woody mountains of Jamaica, in New Caledonia, in Surinam, and the warmer parts of America.

Labradorus. Shining-black; with a blue and green tint; bill and legs black. The Labrador thrufh of Pennant and Latham.

Torquatus. Blackish, with a white wreath, and bill yellowish. The ring-onzel or amulet of Pennant, Ray, Willughby, Albinus, and Latham. The varieties are, merula torquata alba, merula torquata albo-maculata, merula albo-maculata, non torquata. Found in Europe, Asia, and Africa.

Saxatilis. Brown; beneath ffordly orange, undulated with brown and white; rump ferruginous; chin white; throat and intermediate tail-feathers brown, the latter in the margin; fde ones wholly orange. The greater red-bird of Willughby, and rock thrufh of Latham. Found in Italy and Spain.

Eremita. With whitish orbits; olivaceous vertex; the upper feathers of the occiput brown, near the whitish apex black-banded, and the lower ones from red to white; brown at the margin; and cinereous rump. The hermit thrufh of Latham. Found in the Philippine isles.
Turdus Manillensis. From cinereous to blue; blue-rump; tail-feathers and tail red at the margin, blackish; throat and breast spotted with yellow; abdomen orange-coloured, undulated with blue and white. The penive thrush of Latham. Found in the Manillas.

Turdus Solitarius. Brown; spotted for the most part with white and blackish tail. The solitary sparrow of Ray and Willoughby, and solitary thrush of Latham. Found in France, Italy, and the islands of the Mediterranean and Archipelago.

Turdus Cyvanus. With feathers cinereous-blue at the margin; mouth and eye-lids yellow. The Indian mock-bird of Ray, the solitary sparrow of Edwards, and blue thrush of Latham. Found in Canda, the Archipelago islands, and the rocks of Italy.

Turdus Arundinaceus. Brown-ferruginous; beneath whitish-tea-faces; with tail-feathers banded and reddish at the apex. The junco of Gersen, Aldrovan, Ray, and Willoughby. The varieties are T. arundinaceus, with red rump and tail; the T. arund., above varied with black darts; and left T. arund., above yellowish to green; with covers of the wings ferruginous. Found among the reeds of Europe.

Turdus Morio. Shining-black, with the greater tail-feathers red, and apex black. The African thrush of Latham. Found at the Cape of Good Hope.

Turdus Bicolor. Brown tinted with green; abdomen and vent white. The white-rumped thrush of Latham. Found as the former.

Turdus Erythropterus. Black, with red wings; wing-covers and lower quill-feathers of the tail, the intermediate excepted, white at the apex; tail wedge-formed. The Rufous-winged thrush of Latham. Found near the Senegal river.

Turdus Chrysogaster. Green tinted with orange; beneath orange; bill and legs brown. The orange-bellied thrush of Latham. A variety is from blue to green; beneath orange. Found near the river Senegal, and at the Cape of Good Hope.

Turdus Urovang. Cinereous; vertex greenish-black; rest of the head, neck, breast, and body above varying to olive-coloured; the abdomen and creast yellowish. The cinereous thrush of Latham. Found in Madagascar.

Turdus Surinamus. Shining-black; vertex, rump, and lateral spot on the breast yellow. The Surinam thrush of Latham.

Turdus Columbinus. Green, reflecting different farts of colours; the rump and vent sometimes white. The pigeon thrush of Latham. Found in the Philippine isles.

Turdus Dominicanus. Above brown; here and there tinted with violet and steel; beneath from brownish to white; tail steel-coloured at the base, greenish towards the apex. The Dominican thrush of Latham. Found in the Philippine isles.

Turdus Cantor. From greenish to black, shining-blue and violet; with tail-feathers and tail black. The song thrush of Latham. Found as the former.

Turdus Malabaricus. Shining-green; yellow front; throat, bill and legs black; covers of the wings and strike on the lower mandible blue. The yellow-fronted thrush of Latham. Found in Malabar.

Turdus Seleucia. With bill and legs yellowish; abdomen and back incarnate; tail, wings, and thighs brown. Found in Smyrna.

Turdus Zeylonus. Green; beneath yellow; ocular line on both sides extended as far as the black breast. The Ceylon thrush of Latham. Found at Ceylon and the Cape of Good Hope.

Turdus Aquaticus of Brissom. See Tringa Macularia.

Turdus Chiapae, the name of a bird of the west Indies, called also paffar heter.

Turdus in Ichthyology, the name of a genus of fishes, according to Mr. Ray, of the class of those which have only one back-fin, the anterior rays of which are prickly; the hinder ones soft and smooth.

If these fish there are several species, which may properly be divided into two orders; the first, of those which are smaller and broad; the second, of those which are larger and oblong.

Of the first order are the tinea marina, or secrwaff (see Labrus Tinea); the merula, or turdus niger (see Labrus Merula); the leprous, and pita picta; and the turdus viridis, or verdone. Ray's Ichthyogr. p. 320.

Of the second order are the pavo, or peacock-fish (see Chletoon Pavo); and the turdus viridis major, and turdus sphenus maculosus.

The turdus viridis major, or great green wraase, is of a fine green on its back and sides, even to the side-lines; and the lower part of the sides and belly are of a pale whitish yellow, variegated with greyish and pale blue spots; its body is long, and not much unlike that of the pike in figure; its back-fin is long, and has thirty-two ribs, the anterior nineteen of which are rigid and prickly, the hinder twelve soft, flexible, and ramose; the scales are large, the eyes small, and the teeth very large and strong.

The turdus sphenus maculosus, or brown spotted wraase, fearlessly at all differs from the others, except in colour. It is of a dusky hue on the back and sides, variegated with blue spots; and on the belly blue, with lines and spots of red. All the fins, except those of the gills, are of a red colour, spotted with blue; the tail also is of this colour, and the gill-fins are yellow. Ray's Ichthyogr. p. 332.

Turdus Ocelo Radiato of Catelby. See Sparus Radiatus.

Turdus Primoris Branchialeus of Carsen. See Labrus Griseus.

Turdus Flavus. See Labrus Rufus.

Turdus Turecuato, in Geography, a town of Mexico, in the province of Mechoacan; 60 miles W. of Mechoacan.

TUREE, a town of Bengal; 40 miles S.S.E. of Curruckdeah. N. lat. 24° 30'. E. long. 86° 57'.

Turenberg, a town of Prussia, in Samland; 16 miles W.N.W. of Königsberg.

Turenne, Henri de la Tour, Fifteenth of, in Biography, a famous general, was the son of Henry de la Tour d'Auvergne, Duke of Bouillon, by Elizabeth, daughter of William I. prince of Orange, and born at Sedan in 1611. Defined from his childhood to the military profession, his education and habits were conducted and formed with this view. Having acquired the necessary qualifications, he was placed, in 1634, at the head of a French regiment, in which post he acquitted himself with honour; and having pursued a career of distinguished services, cardinal Richelieu, in 1639, offered him one of his nieces in marriage; but his attachment to the reformed religion led him to decline the proposal. After he had served 17 years in Italy and elsewhere with fingular reputation, he obtained, in 1644, the staff of marshal of France, and was entrusted with the command of the army in Germany, the wants of which he supplied out of his own purse. When the war of the Frond broke out in 1649, he withdrew to Holland, but afterwards returned and engaged with the party opposed to the court. In this connection he was defeated near Rhetel in 1650; and when asked how he had lost this battle, he replied, "By my own fault; but when a man commits no faults in war, it is because he has not been long engaged in it." In 1651 his difference with the French
French court was accommodated, and he was appointed general of the royal army. In 1653 he married the daughter of the marshal duke de la Force, a Protestant, but, constantly making the Conde, in the service of Spain, Turenne in 1657, having gained the battle of Dunes, captured Dunkirk from the Spaniards, and the greatest part of Flanders; so that Magazine was enabled to make the peace of the Pyrénées. Upon a renewal of the war with Spain in 1667, Lewis XIV. made choice of Turenne, now marshal-general of the French armies, as his tutor in war; and the result of the first campaign was the conquest of the greatest part of Flanders, and afterwards of Franche Comté. In the following year, Turenne, from motives not satisfactorily ascertained, but not redounding much to his honour, abjured Calvinism, and was reconciled to the church of Rome. In the year 1672, it was determined by Lewis to conquer Holland, and the command of the army was assigned to Turenne; to whose arms reliance was in the course of the campaign intellectual. The elector of Brandenburgh, proposing to relieve the Dutch, was pursued to the gates of Berlin, and obliged to sue for peace. When at this time it was proposed to the marshal to gain 400,000 livres without the knowledge of the court, he thanked the general officer who made the proposal, and told him, that as he had often declined such advantages, he did not intend to alter his conduct at his age. On another occasion, a considerable city offered him 100,000 crowns for not passing through its territory; and his reply to the deputies was, "As your city is not in my proposed line of march, I cannot in confidence take your money." We should exceed our limits, if we detailed his various successful movements during the following campaign. The soldiers repented confidence in their commander, and to this confidence he owed the proper success of various expeditions. The glory of his conquests, however, was tarnished by his cruel devastation of the Palatinate, which Voltaire has justly reproved; observing at the close of his account, that "he rather chose to be called the father of the soldiers that were entrusted to him, than of the people, who, according to the laws of war, are always made the sacrifice." The imperial court, determined to make every possible effort to check the progress of Turenne, called forth Montecuccoli, his best general, to oppose him. As these two masters of war were preparing for an engagement, Turenne, whilst he was reconnoitering a fit place to fix a battery, on July 27, 1675, was struck by a cannon ball, which killed him on the spot, in the 64th year of his age; and with him terminated the good fortune of the French in that campaign. His remains were interred with the highest funeral honours at St. Denis. The greatness of Turenne's soul was disguised by a rude and vulgar appearance. His temper was cool, and his manners modest and unassuming. He was not always successful in war, and committed faults, which he had the magnanimity to acknowledge; but, as Voltaire says, "(Age of Lewis XIV.)" "by always repairing them, and doing much with small means, he passed for the ablest general in Europe, at a time when the art of war was more fluid than ever before. Though he was reproached for his defection in the war of the Fronde; though at the age of near fifty, love caused him to reveal a state-secret; though he exercised cruelties in the Palatinate, which seemed unnecessary; he preferred the reputation of a man of worth, wise and moderate, because his virtues and great talents, which were his own, covered weaknesses and faults which were common to him with so many other men." Ramfay, in his "Life of Turenne," mentions the following anecdote, as an instance of his strict performance of a promise. Being attacked one night by robbers near Paris, and stripped of his money, watch, and rings, he engaged to give them 100 louis d'ors, if they would return him a ring, of no great worth, but which he highly valued. The highwaymen complied; and one of them had the boldness to go to his house the succeeding day, and in the midst of a large company to demand, in a whisper, the performance of his promise. The vicount gave orders for the money to be paid, and suffered the villain to escape, before he related the adventure.

Turenne, in Geography, a town of France, in the department of the Corrèze; before the revolution, the capital of a vicounty; 9 miles S. of Brive.

Turevskoi, a town of Russia, in the province of Ufling, on the Vim; 65 miles N.E. of Yarenk.

Turf, in Agriculture, a term often used to signify the green sward or surface of grass-land. It is of great use and importance to the farmer to have the turf of such land close, firm, and well set, as where this is not the case, it soon declines, grows thin, and becomes of little value either for the purpose of mowing or pasturage. It has been noticed, in the "Georgical Effays" of Dr. Hunter, in speaking of the improvement of the turf of poor pasture land, that, on such, it constantly gets worse a few years after having been laid down for that purpose: the cause of which is plainly this. There are a few fairy grasses, natural to moist poor lands, which are denominated natural grases; while those from the seeds of clover, and others of similar kinds, which are introduced, are in general termed artificial. The roots of these latter are not very durable, especially on poor land; and as the cattle as well as other forts of live-flock are greedy of such fown grases, they constantly crop them, and prevent their going into seed, by which the land is deprived of fresh supplies of young plants; whereas the former fort, or the natural grases, being, in general, much inferior to the other in quality, are refuted by fuch flock, and the land, consequently, soon becomes plentifully focked and provided with them.

It is suggested too, that the general method of practice for improving land, when the turf gets thin and bad, is to bring it under a course of tillage. But when that is not proper or convenient, or when the occupier of such land is not inclined to introduce this mode, it may be greatly improved by having fresh seeds of the grass fort fown upon it; the best seefon for which is in the beginning of the first spring month. The ground should fift be well wrought over with a heavy harrow of the buff kind, which will bruft up and rafe the foil, and prepare it well for the fiking of the seeds in it. Compost earth should then be used as a dressing, and the seeds fown therfon; after which the ground may be lightly brufted over again, and well rolled. When the fefon proves moist and kind, the seeds will be found to thrive to admiration, and to wonderefly improve both the turf and verdure. And where the turf of land has been greatly cut up by carriages, or much trod up by cattle, it is also capable of being improved in this way, without the dressing of compost earth. Even in paddocks where the turf of the land has been cut up to an extreme degree by rude and wanton horses, a new and verdant turf has been seen to arise, even to amazement, in a few weeks after fowing the seeds. It is, however, necessary that cattle should be prevented from coming upon the land until the turf get well set, and in a firm state.

The turf, in all forts of land, may be greatly benefitted by
by the proper use of manure upon it, and at the same time properly feeding it down with suitable kinds of live-flock. See Grass, Grass-Land, and Grazing.

Turf is likewise a term applied to a blackish fibrous vegetable earthy substance, which is used in many parts of the country as fuel. It varies considerably in its nature and composition in different places, being, in some cases, hard and of a dark or black colour, while in others it is soft and very spongy, and of a brownish colour. It is cut and formed into turves for the purpose of fuel, by means of a particular fort of instrument, employed in a certain manner. See Turfing Spade.

It is a substance which is not only very useful in this way, but for burning calcareous flones into lime, and many other purposes in agriculture.

Turf or peat-earth is capable of extensive use as a manure, but it mostly requires some preparation to properly fit it for this sort of application; as it is found that it is a substance which is held together partly by the intertexture of its fibres, and partly by its natural viscidity; and that when it is allowed to dry steadily in that state, it becomes almost incorruptible; and that it does not yield food to growing vegetables, unless its natural conformation be destroyed, and its parts separated by the intervention of other substances. This strongly shews that its structure or texture should be somehow broken down and reduced, and the water which it originally contains be forcibly discharged from it, as soon as possible after it is taken from its native bed, in order to prepare it for manure. There are different methods of effecting this. It has been suggested, that as this sort of fibrous matter will not ferment unless some substances are mixed with it, which act the same part as the mucilage, sugar, and extractive or albuminous matters, with which it is usually associated in herbaceous and succulent vegetables; a mixture of common yard-dung has been lately properly recommended for the purpose of bringing turf or peat-earth into fermentation; any putrefiable or fermentable substance will, however, answer the end; and the more a substance heats, and the more readily it ferments, the better it will be fitted for the purpose. In forming this mixture, it is flated, that one part of dung is sufficient to bring three or four parts of the turf or peat into a state in which it is fitted to be laid upon land; but that, of course, the quantity must vary with the nature of the turf and the dung. In circumstances where some living vegetables are mixed with the turf or peat, the fermentation will be more readily accomplished.

Turf or peat of this sort, after being reduced in its parts, may also be prepared for this use by being soaked in the urine of cattle, in putrid water, and other such liquids; likewise by the action of lime, and by being ridged up and mixed in the manner below.

This material, both in mixture with dung and lime, has been used with great success and advantage in Cheshire. The method of preparing it there, in the practice of some, is, before the winter sets in, to trench and throw it up into narrow ridges, that it may be dried and reduced into a powdery state by the action of the atmosphere. After some time it is turned over and laid flat, being then usually found much lighter than when first dug up. It is now covered over with dung, in the proportion of a fourth or fifth part of the weight, and left so for about three weeks, when it is turned over, mixed perfectly with the dung, and thrown into heaps. A fermentation commonly soon takes place, that varies in its duration in proportion to the moisture in the turf. When it has subsided, the mixture is turned over again, as before, and the turf or peat at the same time broken very small, that it may mix the more intimately with the dung. This often produces another fermentation, more powerful than the first. The mixture is mostly ready for use in the beginning of the spring, if lime be used, the quantity is very much less than that of the dung, but the proceeds otherwise much the same.

If, for this purpose, the turf or peat were thrown up in long narrow ridges, and a little quicklime dusted between the different layers, it would, it is supposed by some, expedite its separation, and dispose it sooner to incorporate with putrid matters.

This substance has likewise been used with great benefit in both of these mixtures, as well as in its simple reduced slate in different instances, in Lancashire, by Mr. Pateron and others. See a paper in the third volume of the Transactions of the Highland Society of Scotland, and Lord Meadowbank's Directions.

Turf, in Gardening, the green surface or sward cut from pastures, &c. for the purpose of laying down grass-grounds; as lawns, plats, bowling-greens, banks of pieces of water in pleasare-grounds, &c.

It is flayed off with the turfing-iron, in regular lengths of two or three feet, and a foot wide; and being properly laid down close and regular in the places intended, it immediately forms an even swarded floor, which quickly strikes root in the ground, in proper growth and verdure. This sort of work may be performed any time in autumn, winter, and spring, in open weather, or occasionally in summer, in a moist season; but the autumn is the best season. The belt turf is mostly procured from fine cloe-feet pastures, commons, or downs, &c. where the sward is close and even; or that of any sward-field of similar close, firm sward, where the grass is not rank and coarse, nor abounding in weeds, or much over-run with the common wild daily, dandelion, or other similar plants.

In the operation of cutting the turf, a line should be drawn tight lengthways of the grass-ground, and then the cutting-racer be strucken into the surface of the sward, close to the line, pulling it along so as to cut or score the sward in a straight cut the length of the line, about an inch and half deep; and having thus raced out one length, the line should be moved a foot and a half further to face out another length as before, proceeding in the same manner to a third, and so on to as many lengths of the line, in foot widths, as may be necessary; then, by the same means, the sward is to be raced crof-sways in yard distances, and thus the proper lengths and widths are formed. After the sward has been thus raced out, it should be flayed, or cut up with the turfing-iron, beginning at one side, cutting evenly longways the whole length of each raced line, about an inch or inch and half thick; a person following immediately after to roll them up separately in yard lengths, grass-side inward, as close and tight as possible; having thus cut up one range, proceed with another in the same manner, and so continue with the whole. As the turfs are rolled up, they should be piled close and regular together, ready for carrying away. When cut by the hundred, as is often the case where large quantities are required, they are commonly piled up in tens; four below, three next, then two, and one at top, for the more ready reckoning of the number wanted.

In performing this sort of work, it is constantly necessary to keep a steady hand, in order that the turf may be cut all of an even regular thickness without any sort of lumps, or roughness; which renders it less difficult and troublesome to lay down, as such lumps cause many inequalities that can-
not be easily made level, but require so much beating as often to greatly injure and defray the turf, as well as to be productive of a great waste of time and labour, thereby causing a great deal of unnecessary expense. Besides, such work under these circumstances can never be done so well as where the contrary is the case.

**Turf-Ashes**, in Agriculture, those formed from any sort of turfy or peaty matters. Turf-ashes have been used as a manure on poor thin soils, in some districts, with great effect and advantage; and for potato crops; but they are probably, in general, the best when employed as top-dressings for grasses and certain kinds of crops. See Top-Dressing.

The ashes formed from turf or peat in Berkshire have lately increased greatly in value, in consequence of their general application as a top-dressing to clover and other sorts of artificial grasses, as well as to tares, turnips, and occasionally wheat in the young state of its growth. The usual time of applying them is the very early spring. They are there commonly taken in carts, and fown by the hand over the ground, either before or after the feed for the crop is fown. But when used only as a top-dressing, they are merely sown on the surface of the land evenly by the hand. The quantity made of is mostly from twelve to fifteen flatulate bushels to the acre, as the soil and crops may be. It is believed, that too large quantities would be hurtful. Some do not hold them in much estimation for grain crops, or those of the pea kind; but they are preferred to all other manures, especially for all sorts of artificial grasses. In turnip crops, they are said to afford much in preventing the ravages of the fly; and in those from the seeds of grass, the farmers suppose, that on an acre which is manured with them, the produce in hay will be nearly a ton more than what it would have afforded without them.

On meadow-land too, in some cases, from fifteen to twenty bushels of these ashes may be laid with great improvement to the grasses. The effect of them is supposed to be of longer duration than two years.

Several acres may be gone over with the sowing of the ashes in the course of a day, by one person and a two-horse cart. See Ashes and Sulphate.

**Turf-Dressing**, a term applied to that sort which is formed in turfy situations, and filled with turves or peats; and which is done in an useful, neat, and successful manner in many districts, especially in Lancashire, as may be seen in the corrected agricultural report of that county. It also signifies a sod-drain. See Surface-Drain.

An improved mode of turf or sod-draining may likewise be met with in the report on agriculture for Cheshire.

**Turf-Hedges**, that fort of fence which is formed by means of fods, or the dug-up turf, and plants of different kinds. For turf-hedges that are to be fix feet high when finished, fix-feet bales are allowed in some places, as in Cornwall; and as they lettle a good deal, half the height is only built at a time, with the filling well ridged up in the middle to throw off the wet. This remains to lettle perfectly, when the other half is laid, and the proper plants or cuttings put in. This is thought to be an improvement in the forming of this sort of fence. See Fence.

**Turf-Houses**, in Rural Economy, that fort which is formed of the turf cut from land, and which is common in the northern parts of the island.

**Turf-Mats**, or Bog, a term applied to a tract or extent of turfy, mossy, or boggy land, from which turf is cut, or which stands in need of being reclaimed and brought into order by suitable draining, and the proper application of weighty earthly substances of different kinds. See Bog, Moor, and Moss.

**Turf-Spade**, a tool of this kind, which is used in cutting turf for fuel. It is about four feet in length with the handle, and four inches in breadth, being made sharp in the mouth-part, and having an ear or sharp iron on one side of it, which is bent or turned up to a right angle, that serves to cut and separate one side of the turf from the bed of turfy matter, as the back and mouth of the implement do the other.

The work of cutting the turves for burning by means of this spade, is performed somewhat in this manner: the ground being first marked out on the surface in a straight line, of a length at pleasure, and between three and four feet in width, is then dug level on the surface with a common spade, the whole of the bad and imperfect turfy parts being removed. The turf is then cut by a person standing in the pit or ditch, with the narrow spade described above, which is laid at the lower end with iron, as has been said, in a sharp manner. By this means every turf is cut and formed into a long fort of square, which is then taken from the workman, and spread on the ground in a close manner, until dry, when they are set up on end, three or four together, and afterwards put up into windrows and small flacks, till ready to be led or carried home for use.

The spade which is made use of in cutting the turf or peat for being reduced into ashes in Berkshire, is somewhat of this form too, but it has a considerably greater length of the mouth-part. The turf or peat, when dug by it, is carried from the spot in little wheel-barrows, to a short distance, where it is spread on the ground, and after lying some days, the pieces are turned, which after being several times repeated, a heap is made of it, in the middle of which dry turf is put, which is set fire to, and the whole slowly burnt, additional quantities of turf or peat being occasionally supplied, so that the burning may be slow and smothering. The heap is mostly of a circular form, and rather flat at top, being small at first, but ultimately sometimes two or three yards in depth, and fix or seven in diameter.

The remaining materials, when passed through a riddle, are taken away, in a covered manner, to great distances.

**Turf-Sweating**, an Indian method of curing deficiencies, which has been found to succeed very happily on many trials.

Paul Dudley, esq. gives an account of a man of seventy-four years old in New England, who drinking cold water when very hot, had a painsettled in one side and arm, which baffled all art to remove; till after nine weeks' confinement to his bed, when he was given over by every body, it was proposed to try this method of cure upon him.

An oven full of turf was ordered to be cut; the turves were of about eighteen inches square each, and were of the nature of the English turf used in gardens.

The Indian doctor, before the turf was put into the oven, rubbed over their grassy side with some sort of oil or spirit, and then putting the two grafs sides together, placed them in the oven. When they had been two hours there, and were well baked, he took them out, and made a bed upon the floor, the place for the head being a little raised; the old man was then taken out of bed without his shirt, but wrapped in a sheet, and being laid on the turf-bed, such another parcell of the hot turf was laid over him. The turf was laid thickest on that side where the pain was, but none of it was put on his breast or head.

He was then covered with a blanket to keep in the heat; and while he was in this warm bath, he was continually supplied with warm cordials to keep him from fainting, of which he was in great danger. After he had lain in this bath about three quarters of an hour, which was as long as he
he could bear it, he was put into a bed very well warmed, without his shirt, where he soon fell asleep, and sweated to that degree, that it ran through the pillow and bed on the floor. After about two hours' sweat, they rubbed and dried him, and put on his clothes, and the old gentleman found himself much eated and refreshed. The operation was performed in the morning, and before night he walked about the house comfortably, his pain being almost all gone. The cordials were, after this, repeated, and, on the fourth day, the sweating was performed again; the day after which, the old gentleman was well enough to go about his business. He lived eleven years afterwards in perfect health, and free from pain.

Great care is to be taken in this operation that the patient do not lie too long in the turf: in many cafes, a quarter of an hour is found to be long enough; and the general rule is, that as soon as the patient begins to hitch his breath short or faint, he must be put to bed immediately, and the cordials must by no means be omitted, for the life of the patient is endangered without them. Phil. Trans. № 384, p. 129.

TURFAN, in Geography. See Taurfan Hutan.

TURFING, in Gardening, the operation of laying down turf. In preparing the ground for this purpose, it should, where loose, be well trodden, or occasionally rolled and rammed; then be properly levelled on the surface with the fpade, and afterwards raked smooth; when it will be ready for laying. In laying the turfs, they should be unrolled regularly on the ground, each in its place, making them close edge to edge, so as to form at once a close even fward; beating the whole down close and even afterwards with a heavy wooden beater, to settle the roots of the grafs close to the earth, as well as to form the surface equally close, firm, even, and smooth; the turf thus soon strikes root below, and grows above, without any further care in this part of the business, except occasionally beating down any swelling inequalities, and sometimes rolling it with a heavy iron roller. Sometimes, when turf is laid in the summer, or in the early part of autumn, in dry hot weather, it will shrink and open considerably at the joints, and assume a decayed-like appearance. In this case, a few good waterings would be serviceable; but should this be omitted, the first heavy rain will mostly recover the whole effectually, and swell the fward, so as to close all the chafms, and revive the verdure of the grafs plants, when a heavy rolling should be given, to settle the whole firm and even, and to give the surface a neat appearance. The principal circumstance to be regarded in this sort of work, is to have the surface of the ground well levelled before the turfs are laid down, for where this is neglected, it is utterly impossible to do the business so as to look well.

In respect to the after-culture of ground formed with turf, it is chiefly to give occasional mowings, from the spring through the summer till October, and occasionally rolling and rolling the surface to keep it even and level. The mowings in these cafes should constantly be performed before the grafs gets to too high a growth, so as to injure the surface appearance by rendering it tender and of a bad colour.

TURFING-Iron, an implement made use of for flaying or cutting up grafs, turf, or fward from land for the purpose of turfing; it is formed with an iron plate for the cutter, from 6 to 10 feet or eight inches wide, a little rounding forward at the edge, which is thin and sharp for cutting, but thickening gradually behind to the upper part, where it is forged to a long bent iron handle, the bending of which formed as to admit of the plate or cutter rolling flat with its back on the ground, in the proper position for readily cutting or flaying the turf or sward evenly off, of a regular depth or thicknigh; the handle at top being either formed of iron, with an opening like the top of a fpade, or a socket in which to fix a short wooden handle of that kind. In using it in cutting the turf or sward, the workman takes hold with one hand in the top handle, the other below, with the latter guiding the tool in the proper position, while the upper hand is placed against his knee, &c. which affists him in thrusting it forward into the ground evenly under the sward; and thus he proceeds along in a regular manner, moving the tool gradually along at each stroke, level and even, at an equal depth. Thus, as one range of turf or sward is pared off, another is begun with until the whole work is done.

It is necessary that the edges of the cutting iron should be well fleeced, and ground perfectly sharp, as the labour by such means is rendered much less, and the work far better performed.

TURFING-Spade, in Agriculture, the name of an implement used to under-cut the turf, after it is marked out with the plough, in the old practice of paring and burning the turfy surface of land.

TURGA, in Geography, a town of Bengal; 40 miles S. of Dofea. N. lat. 22° 22'. E. long. 85° 5'.

TURGANA, in Ancient Geography, an island on the coast of Arabia Felix, in which was a very magnificent temple dedicated to Serapis, according to Ammianus Marcellinus.

TURGESENCE, Turgescency, a swelling or growing bloated.

TURCHE, in Geography, a river of Wales, which runs into the Cothby, in Caermarthenshire.

TURGOT, ANNE-ROBERT JACQUES, in Biography, an enlightened and patriotic minister of state, was born at Paris in the year 1727, and studied theology at the Sorbonne, where, in his 22d year, he delivered two Latin discourses, "On the Advantages derived to Mankind from the Christian Religion," and "On the Progress of the Human Understanding." At the age of 24 he translated Virgil's Georgics, and thus a change took place with regard to the direction of his studies; so that he became attached to the principles of Quesnay, and of the sect called Economists. Having quitted the Sorbonne, he was appointed intendant of Limoges; and in the course of twelve years, during which he occupied this office, his conduct in distributing alms and providing a supply of food in a time of scarcity, and in introducing various improvements in the province, ennobled his character, and commanded for him great respect. With him, it is said, first originated the institution of charitable work-shops. As comptroller-general of the finances, he adopted various regulations, which, without injuring the revenue, encouraged industry, promoted agriculture and commerce, and lightened the burdens of the lower classes. Although many of his beneficial plans of reform were treated with contempt and ridicule, he succeeded to a considerible degree in ameliorating the state of the country. His resolution, diligence, and activity, overcame many obstacles and difficulties, infomuch that the benevolently disposed Lewis once said, on leaving the council-chamber, "No one loves the people but M. Turgot and I;" nevertheless, the cabals against him prevailed, and he was dismissed from the important office which he occupied with so much advantage to the people. As an incitement to his industry, he alleged, that in his family life was not protracted beyond the age of 50; and, therefore, having but a few years before him, he determined to leave nothing unfinished. Accordingly he died in 1781, at the age of 49. Of the pieces which
which he published, Condorcet has given an account in a "Memoir on his Life and Writings," 1782, 8vo. La Harpe has given us the following sketch of his character. He was a man of a strong mind, whom nothing could divert from justice, even at court, and in the highest places; of an unalterable equanimity, even in the midst of the oppressions and dignities of his ministry; of a laborious activity, which difeased could not slacken. He had only two passions, that of science, and that of the public good. During the few years in which he occupied the post of minister of finance, he bent all his views to the relief of the people. Attached to the doctrines of the Economists, he developed them in edicts which tended to the encouragement and improvement of agriculture. He was the first among us who changed acts of the sovereign authority into works of reasoning and persuasion; and it is perhaps a question whether this method may be useful or dangerous. His suppositions and reforms in the finance raised him many enemies; but among all who complained against him and reproached him, not one attacked his integrity. No one disputed the purity of his motives, but fault was found with his measures. Perhaps there was something unyielding in his character, which impeded the good which he wished to effect. Further, the courtiers could not pardon a minister who encircled himself with men of letters and philosophers. His innovations in favour of the people created a prejudice against him, on the ground of his being one of the promoters of the French revolution. Nouv. Dict. Hist. Gen. Biog.

TURGUT, in Geography. See DURGUT.

TURHUSSEY, a town of Bengal; 17 miles N.N.E. of Palamov.

TURIA, in Botany, an Arabic name, retained by Forckall, Fl. Egypt.-Arab. 161, and cited by Jussieu, Gen. 395, under Anguria. The above name, if wanted, might not be inadmissible; at least, if any such, of barbarous origin, are allowed to remain. But whether the five, partly doubtful, species on which Forckall has founded his genus be really entitled to stand alone, or whether they may be referrible, as Jussieu hints, to Anguria, or to any other genus of the Cucumber tribe, no one, concurring with Forckall's works, will, surely, venture to determine. He attributes a pentapetalous corolla to these plants, which is unexampled in their natural order, and which, by other parts of his account, appears to be an error. The villous cylindrical fruit, tapering at each end, and marked with ten furrows, will scarcely afford a generic character.—Forckall's first species, Turia of the Arabs, to which he has given no specific name, is cultivated in Yemen, but we are not told for what purpose. Some of the others are called, in that country, Lela or Lua, Giffij, and Mogabid.

TURIAMO, Bay of, in Geography, a bay of Caraccas, three leagues to the windward of Porto Cabello, which extends one league from north to south. Having no shelter from the north wind, and the country round it affording no commodities sufficient for inducing merchants to encounter its inconveniences, scarcely any ships resort to it. The cafe is the fame with regard to Patanemo, Baborura, and Sianega. The whole population of these bays consists of not more than a small party of soldiers, stationed there to prevent smuggling.

TURIN, a river of Sicily, which runs into the sea, 10 miles N.E. of Mirtettra.

TURIS, the Guadalquivir, in Ancient Geography, a river of Hither Spain, on the banks of which was built the town of Valencia.—Alfo, a river or torrent of Italy, mentioned by Silius Italicus (l. xiii. v. 5.), and thought to be the fame with that mentioned by Livy, and placed six miles from Rome. But the orthography is much controverted.

TURJA So, TARACOA, or Tarasoa, a town of the interior of Hither Spain, towards the south-west. Pliny speaks with high commendation of its iron. It was municipal. It was situated eaf of Numantium, and south-west of Calaguris.

TURICUM. See ZURICH.

TURIGA, a town of Spain, in Baetica.

TURIGA, in Geography, a river of Russia, which runs into the Nizni Tunguska, N. lat. 66° 12'. E. long. 98° 44'.

TURIN, a city of France, capital of the department of the Po, during the revolution, before and finance capital of Piedmont, situated at the conflux of the Po and the Grand Doria, about seven miles from the foot of the Cottian Alps, in the road from France to Italy, by the way of Mount Cenis. According to Pliny, the inhabitants derive their origin from the Ligurians, and were anciently called "Taurini." Hamilcar, the Carthagian general, when he invaded Italy, took and destroyed the town, because the inhabitants would not take part with him; which frightened the other people who inhabited the banks of the Po. It was erected into a Roman colony by Julius Caesar, who gave to it the name of "Julia," and it was called "Augusta Taurinorum" by his successor Augustus. It was successively subjected to the Goths, Huns, Eruli, and Burgundians, who ruined and destroyed it; but it was soon rebuilt, though not so large as before. When the Lombards became masters of the country, it became the capital of one of their principal duchies. Some of the dukes became kings of Italy. After Charlemagne had abolished the kingdom of the Lombards, Turin became subject to the marquis of Sufa, who had the charge of guarding the passages of the Alps, and continued in that family to the death of Ulric Manfred, the last marquis of Sufa, in 1502; whose daughter, Adelaide, married Odo, comte of Maurienne and Savoy. Turin submitted to him and to his descendants, who possessed it with little interruption till its union with France; before which Turin was the see of an archbishop, and was paid to contain 150 churches or chapels, several hospitals, and about 80,000 inhabitants. The approach to it is magnificent, and the environs beautiful, though thick fogs from the two rivers are frequent in autumn and winter; so that the air of Turin is then very thick and moist. The four gates are highly ornamental: the streets in the New Town are wide, straight, clean, having plenty of water running through them, well built, in a good taste, chiefly of brick succedee, and generally terminating in some agreeable object. No inhabitant could rebuild or repair his house but on an uniform plan, laid down by government, for the improvement of the city. The fortifications of Turin were regular, and kept in excellent repair. The citadel is a regular pentagon, confiding of five strong bastions, and is reputed one of the strongest in Europe. At the end next the new gate is the arsenal, which, besides the armories found in such places, contains a cabinet of minerals, a good chemical laboratory, a library of books in mineralogy and metallurgy, and furnaces for casting cannon; here, also, are mathematical, mechanical, and other matters, for the instruction of engineers, miners, &c.

The garrison of Turin was changed at the end of two years, and then there was a general review. The university was founded first in 1405; by Amadeo, duke of Savoy, and consists of schools, wherein the 24 professors read lectures, from the 3d of November to the 24th of June; the royal library, in which are about 50,000 volumes of printed books, besides manuscripts, is open every day,
day, except holidays, both morning and afternoon. The
royal museum has a good cabinet of medals, and a collection
of antiquities, found chiefly in Piedmont or Sardinia, and
elegantly arranged: also of natural history, as shells, and
English minerals, polished marbles, and hard stones, petrifi-
cations, corals, zoophytes, and fome minerals, collected by
Donati in the Adriatic; also, fome chefs of natural cu-
ricities, which Donati during his travels in Egypt and
Arabia, fent from Gea. In the military academy, young
gentlemen, both natives and ftrangers, might be instructed
in the exercises at a moderate expence, the king defraying
a part of the charge attending this institution. The palace
is in a fimple and noble style of architecture. The apart-
ments are handsomely fitted up and furnished; the ceilings
painted by Daniele di Sanfierre and others. They con-
tained a great collection of pictures, among which were
many good ones. The king's theatre, or great opera-houfe,
is reckoned one of the fnefl in Europe. The buildings
which are most effecfuen in point of architecture, are the
palace of the duke of Savory, called Castello Reale, by Fi-
lippo Giuvara; the Carignano palace, by Guarini; the
buildings of the university, and the town-houfe. There is
a literary society at Turin, which has published memoirs,
under the title of "Miscellanea Philofophico-Mathematica."
The chief trade of this city and country is in thrown flilk,
which is sent to England and Lyons; they manufacture,
however, fome of it into excellent flockings, and good flilk
for furniture. In the year 1736, Turin was taken by the
French, and again in the year 1849, after a long fiege.
In the year 1796, the fame enemy made another attempt; but
after besieging it upwards of three months, under the con-
duct of the duke of Orleans, they were driven away with
great lofs, by the duke of Savory and prince Eugene. In
December 1797, the French took this city, and levied on
the king of Sardini a contribution of 2,000,000 livres.
In May 1799, it was taken by the Autfrians and Ruffians,
and the citadel furrendered foon after. It was afterwards
furrendered, with the whole of the principality of Piedmont,
to the French republic, but restored after the revolution and
re-eftablifhment of the French government. N. lat. 45° 3'.
E. long. 7° 40'.
At Turin, accounts are kept in lire, foldi, and denari,
Piemonte fcurrency: 12 denari = 1 foldo, and 20 foldi
= 1 lira: accounts are also kept in francs and centimes, as
in France. The gold coins now in circulation are carlini,
of 5 doppie or piibolos, with half carlini in proportion,
and doppie, with halves and quarters in proportion: the
carlini paffes for 100 lire, and the doppia for 24 lire,
Piemonte fcurrency. The silver coins are fcuo of 6 lire,
with halves, quarters, and eighths in proportion. Here
are also base fliver coins of 3½ and 2½ foldi; and copper coins
of 1 foldo; also pieces of 3 denari, called quattrini. The
doppia contains 172½ troy grains of fine gold, or 139! grains
of English standard gold, and is worth 17 l. 2s. 6d.
In English gold coin: the fcuo contains 492 troy grains of
fine fliver, or 532 of English standard, and is worth 5s.
8d. in fterling fliver coin: thus the lira Piemonte fcurrency
may be valued at 114d. fterling. The rubbo, com-
mercial weight, is 25 lbs., each pound containing 1½ mark,
or 12 oz. of the gold and fliver weight: fo that 70 lbs. of
Turin = 57 lbs. avoirdupois. The facco, corn meafure,
contains 3 flaga, 6 mine, or 48 coppelli; and 22 facchi =
9 English quarters nearly: the brenta, wine meafure,
contains 6 rubbi, or 36 pinte; the rubbo weighs 25 lbs.
of Turin, and holds about 24 English gallons. Oil is sold
by the rubbo of the fame weight, or 20½ lbs. avoirdupois:
the rafo or ell is = 2½ Genofe palmi = 23½ English inches;
the foot = 143½ French lines = 3¾ English inches: fo
that 180 Piemonte rafi = 119 Eflgh yards, and 53
Piemonte feet = 35 English feet.
Turin exchanges with, and gives Amflerdam, 38 foldi,
more or lefs, for 1 florin banco; Augsburg, 46 foldi for
1 florin current; Geneva, 86 foldi for 1 ecu of 3 livres cur-
rent; Genoa, 190 foldi for 1 fequin; Leghorn, 82 foldi
for 1 pezza of 8 reali; London, 409 foldi for 1 fterling;
Lyons and Paris, 50 foldi for 3 livres Tournois; Milan,
38 foldi for 1 filippo of 7½ lire current; Rome, 90 foldi
for 1 fcuo of 10 paoli; Venice, 54 foldi for 1 ducat
piccoli.
The ufance for bills drawn from London is three months
after date, from Holland two months, and from France one
month. The holder of a bill payable after date, may
either demand payment when it becomes due, or wait
till the fifth day; but bills at fight must be paid when
presented. Kelly.
Turin, a large poft-town of New York, in the S.W.
corner of Lewis county, 143 miles N.W. of Albany. It
comprises seven townships, viz. Pomona and Lucretia, adjoin-
ing Black river, and on which are the fettlements; Flora,
Xenophon, Rurebbela, Hybla, and Penelope, unfettled.
The fettled part is about nine miles along Black river and
seven back. The inhabitants are emigrants from the easter
flates, farmers of plain domestic habits. Here are nine
school-houfes, in which are also held the meetings for
worship. The whole population in 1810 was 856, and
theffenial electors were 111; in 1812, 170. The Black
river road from Johnstown leads through this fettlement,
which has an excellent foil, and in which are two grain-
mills, fix saw-mills, a carding machine, and two distilleries
of grain and fruit spirits.
Turing, a town of Sweden, in the province of
Blekingen; 7 miles N. of Carfferona.
Turinge, a town of Sweden, in Sudermanland; 24
miles W.S.W. of Stockholm.
Turini, Francesco, in Biography, an eminent Ita-
lian compofeer of the feventeenth century, who gained great
reputation by the compofition of canons. He was organ-
iff of the Duomo at Brefcia, and publifhed many learned
compofitions for the church and chamber; but particularly
a mas in 1643, for four voices, in canon.
In this work there is a perpetual fugue, upon the sub-
ject of which Handel has compofed one of his fnefl instru-
mental fugues; but, according to his ufual practice, when-
ever he adopted another's thought, he has elivened and
embellifhed Turini's theme, like a man of true genius, with
a counter fubject; and fhewn that he faw farther into the
latent fertility of the fame feries of notes, than the original
inventor, whose theme was the following.

\[
\begin{align*}
&\text{The firft fonatas for two violins and a bafe, which our} \\
&\text{musical enquiries have been able to discover, were} \\
&\text{publifhed by Turini, with a fet of "Madrigali a una, due, tre} \\
&\text{Voci, con alcune Sonate a due et a tre," Venezia, 1624.} \\
&\text{We were inftrigated by this early date to fcore one of these} \\
&\text{fonatas, which confifted of only a fingle movement, in} \\
&\text{fugue and imitation throughout; in which fo little ufe was} \\
&\text{made of the power of the baxe in varying the expreffion of} \\
&\text{the fame notes, that each part might have been as well} \\
&\text{played on one instrumen as another.} \\
&\text{The violin does not appear to have been Turini's instru-} \\
&\text{ment. A canoniff need have nothing else to think of, than} \\
&\text{the}
\end{align*}
\]
the solution of harmonical problems, which require such intense application as to leave him not a single idea to bellow on anything else.

TURINSK, in Geography, a town of Russia, in the government of Tobolik, containing a wooded fort, seven churches, and about 350 houses; 144 miles W. of Tobolik. N. lat. 58°. E. long. 63° 44'.

TURINSK is a town of Russia, in the government of Tobolik, on the Niznica Tunguska; 132 miles E. of Turunchan.

TURIN, in Geography, an appellation of a very ancient origin and of very comprehensive extent. It is said to be derived from the name of one of the sons of Japheth, the eldest son of Noah, who is generally allowed to be the progenitor of the Moguls and Tartars. This opinion has been adopted by those who have been most conversant with Oriental literature, and the Tartars themselves have expressed their persuasion of its truth. Accordingly it is said, that the progeny of Magog, Meshech, and Tubal, subverted both the Scythias, and consequently the country of the ancient Moguls and Tartars. If it be admitted that the Turks and Tartars were originally the same people, whatever is advanced concerning the first progenitors and early antiquities of the one, must, with the strictest propriety, be applicable to those of the other. It has been alleged as highly probable, that both the present Turks and Tartars are descended from the Scythians of Arisaces Proconneus, and the Scythian Nomades of Herodotus (lib. iv.). Upon this supposition, the ancient Turks or Tartars cannot be considered as one of the earliest nations of antiquity, nor as occupying a tract for many ages of very considerable extent. For they fearfully made any figure at all before the reign of Cyrus, king of the Medes, or the time of Ogres Khan, about 637 years B.C., when they drove the Cimmerians from their territories bordering upon the Palus Maeotis into the Upper Asia. Nor could their primitive seat, upon the eastern bank of the Volga or Araxes, have been at that time very extensive; since it is well known that they were then a people of little note, and in the vicinity of some nations who were contending for unlimited empire. In the time of Herodotus, Scythia lay only between the 45th and 57th degrees of latitude, and the 45th and 55th degrees of N. latitude, so that the Scythians at that period cannot be regarded as a very formidable power. The first Scythian king, according to this historian, did not live above 1000 years before Darius Hystxes invaded Scythia, in the year B.C. 514: or by reducing the calculation of the Greeks and other ancient nations, as far Isaac Newton has done, it may reasonably be supposed that the first Scythian prince could not have preceded Darius Hystxes above 800 years. At this early period, therefore, or 1300 years before the commencement of the Christian era, the countries bordering upon the Palus Maeotis, as well as the Euxine and Caffian seas, must have been very thinly peopled. The Tartars, however, though they derive their name from Tatar Khan, pretend that this was not their primitive appellation, but that they are the descendants of Turk, as we have already said, the eldest son of Japheth, whom they call Japhis; and accordingly they maintain that they were originally denominated Turks; which name they seem to have retained till the time of Genghis Khan. But when that prince reduced all the tribes bearing the name of Turks under his obedience, they, with regard to their neighbours, gradually lost it, and were by them afterwards called Tartars. Nevertheless, though this was the case with respect to their neighbours, most of them have always denominated themselves Turks; nor do they allow, that any other nation has the least title to that denomination. The name of Tatars was at first probably applied to one particular tribe or horde of the Turkish nation, confiding of persons more considerable, warlike, and better known to the Aliates, on account of their military exploits than the rest, till the time of Genghis Khan. This was succeeded by that of Moguls, which prevailed as long as the dominion of the people lo called lallted over the southern provinces of Asia; when that expired, the former appellation was resumed. It is observable, that Sirerh al Edrili, commonly called the Nubian geographer, makes no mention either of Moguls or Tartars; but intimates that the whole country bearing now the denomination of Oriental and Western Tartary, was peopled by different cantons of Turks. This is the more remarkable, as that author wrote but a little before the reign of Genghis Khan, about the year of Christ 1170.

Turk, it is said, was appointed by his father Japhet to bear the chief rule in his family after his death; and being a man of superior genius, he invented many of the conveniences of life, made tents, and governed his family and subjects with great justice, prudence, and moderation. He also formed a body of salutary laws for his descendants. Turk is said by the Arabs to have had four sons; and from him the country in which he settled was called Turks in the Arabian language, and his subjects were denominated Turks. From Tatar Khan, the Tatars or Tartars derived their name, as the Moguls did theirs from Mogul or Mung' Khan. These two branches of Turks, being rendered independent of one another, formed two considerable empires, which flourished for several generations. See Mongols and Tartars.

The name Turk, says Volney, originally, was not peculiar to the nation to which it is now applied; it denoted, in general, all the hordes dispersed to the east and to the north of the Caspian sea, as far as beyond lake Aral, over those vast countries which have taken from them the denomination of Tartary. These are the same people, who were known to the ancient Greeks by the names of Parthians, Maflageites, and even of Scythians, for which we have substituted that of Tatars. These formed a nation of shepherds, continually wandering like the Bedouin Arabs; and in every age exhibiting themselves as brave and formidable warriors. Neither Cyrus nor Alexander was able to subdue them. The Arabs, however, about 80 years after Mahomet, by order of the caliph Waled IV. invaded the country of the Turks, subdued them, and imposed upon them their religion; and obliged them to pay tribute. But the power of the caliphs was reftored and vanquished. Like the Bedouins, the Turks were divided into tribes or camps, called "ordou," of which has been formed the term horde; and these tribes, allied or at variance, according to their several interests, were perpetually engaged in wars. Hence we see, in their history, several nations, all equally called Turks, alternately attacking, destroying, and expelling each other. Volney, in order to avoid this confusion, has confined the name of Turks to those of Constantinople, and given that of Turkomans to their predecessors. (See Turkomans.) For a further account of the Turks, see Turkish and Turkey.
Turk's Cap, in Botany, a name given to a species of lily. See Lilium.

Turk's Head, a name sometimes given to the melon thistle.

Turk's Turban, a name given to a species of ranunculus.

Turk Islands, or Turk's Islands, in Geography, a cluster of small islands among the Bahamas, the largest situated N. lat. 21° 20'. W. long. 74°.

TURKAL, a town of Asiatic Turkey, in the province of Sivas; 25 miles S.E. of Amarcin.

TURKAREL, a town of Candahar; 30 miles W. of Cabul.

TURKEIM. See TURKHEIM.

TURKESTAN. See TURAZ.

Turkestain, (formed of Turk and ostan, a Persian word signifying country,) or Turan, a country of Asia, bounded on the N. by deserts, which separate it from the dominions of Russia, on the E. by a part of Tartary, belonging to the Kalmucks, on the S. by Buharia, and on the W. by Kharafm or Kharafm, near 300 miles in length, and not much less in breadth. It is at present divided between two Tartar khan's or chiefs; one of them, residing at Tashkund, possesses the eastern part; the other, who possesses the western part, resides at Turkistan or Taraz. The latter is generally called the khan of the Karakalpaks. Turkistan, taken in a larger sense, is understood to include all the country between Russia to the N. and Buharia to the S., and between the Caspian sea to the W. and Chinife Tartary on the E., not less than 700 miles from E. to W. and 350 from N. to S.

In ancient periods, Western Turkistan and the N. of the Cappadocia were the seats of the Mafflaget; to the S. of whom were the Scythians, on this side of the Imaus or Belur-Tagh. In the sixth century, the Turks, having migrated from their habitations near the mountains of Bogdo, adjoining to those of Altai, or the mountains of gold, and having impared to the country the name of Turkistan, and forming a grand branch of the Tartars, or Huns, spread themselves to the Cappadocia. They soon after subdued the people of Sogdiana, and the Nephthalites of Great Buharia, called in that ignorant age White Huns. As the Turks founded their first western settlements in the regions now held by the Kirgises, they thence received the name of Turkistan, the capital city being denominated Otrar, and sometimes Taraz, also called Turkistan. From the centre of their power flourished those Turkheim armies, which have changed the names of to many nations. Little Buharia was called Eastern Turkistan from a similar cause; but appears to have been first subdued by the Turks of Cathay, on the N.W. of China. The Turks and Huns may be considered as one and the same Tartar race, totally unknown to Europeans till the appearance of the latter, who first passed the steppes, deserts and mountains which had concealed them from observation till the fourth century. The Huns, who appeared about A.D. 375, feem to the writers of the period as a new and unknown race, having passed in a course of uniform depredation from Asia to Europe; while the Gothic and Slavonic nations had left many of their settlements vacant, in their progress into the Roman empire. But the Turks, though originally the same people, perhaps alarmed by the fate of their brethren, made a slow and gradual progress, and appear to have been blended by marriages and conquests with the Slavonic and Gothic tribes on the N. and E. of the Cappadocia. Such was the origin of the name of Turkistan, from which the Turks spread defoliation over the most beautiful countries of the East, and even threatened the liberties of Europe. Pinkerton's Geog. vol. ii. See BUCHARIA and INDEPENDENT TARTARY.

TURKEY, an extensive empire, comprehending a great number of countries on the continents of Europe, Asia, and Africa, and several adjacent islands. Turkey in Europe extends, according to the statement of Pinkerton, about 870 miles in length, from the northern boundary of Moldavia to Cape Matapan in the Morea; and its breadth, from the river Unna to Conflantinople, is about 650 British miles. It is computed to contain 182,560 square miles. Its eastern and southern boundaries are formed by the Euxine or Black sea, the sea of Marmora, the Archipelago, and the Mediterranean. Its utmost northern limit is now the river Drisfer, and the western confines of an arbitrary line, sometimes supplied by rivers or mountains. In its whole extent it comprehends many ancient kingdoms and republics, which, since the subjugation of its greater part in the 15th century, after the fall of Conflantinople and of the Byzantine empire, afford only the records of clasical names and events. Moldavia, the most northern province, was part of ancient Dacia; and Jaffy or Yaffi, the capital, was the "Jailfiorum Municipium" of the Romans. Budzak, or Bejaria, was the country of the Cete and Pucicini. Walacliya was also a province of the ancient Dacians; and Bulgaria, on the S. of the Danube, embraces nearly the two provinces of Macia. Romelia, a spacious territory, contains ancient Thracie, Pazonia, Macedonja, and the northern part of the clasical country of Greece; and the Morea is equivalent with the ancient Peloponneseus. Dalmatia retains its ancient apellation; while Servia and Bohemia represent ancient Pannonia. Turkish Croatia, the most western province of the empire, forms a portion of ancient Pannonia, with probably a small district of Noricum; but the Turkish part of Croatia is a diminutive province, about 40 miles in length by 20 in breadth, bounded by the river Save on the N., and partly by the river Unna on the W. In modern times Turkey, sinking before the power of Russia, has lost the provinces of the Crim and New Servia, which, with several Aftatic districts, have surrendered to Russia; and on the W., Transylvania, Schavonia, with the Buckovin part of Moldavia, and a great part of Croatia, have been subjugated by Austria. Of the original population of the Turkish empire, we have already given some account under the article TURK; and it appears to have been derived from the ancient Scythians on the Euxine, the progenitors of the Dacians, Thracians, &c. and even of the Greeks. These were originally blended northward with many Sarmatic or Slavonic tribes; which on the fall of the Roman empire migrated towards the S., so that about one-half of the population may now be regarded as Slavonic. Walacliya, however, is supposed to contain many descendants of the ancient Roman letter in Dacia. This original population, in consequence of the extent of the Turkish empire, has been blended with various Aftatic tribes, among whom the Turks constitute a part. Of that branch called Ottomans, and the commencement of their appellation of Ottoman empire, we have already given a brief account under the articles OTHMAN and OTTOMAN; and for the more remote antiquity of the name and power of the Turks, we refer to TURK. Those Turks, or Turkomans, descending, about the middle of the sixth century, from the Altaina mountains, spread as far as the lake Magoni; but their progress was restricted to the region near the river Oxus; from the Oxus and Samarcand they afterwards spread to the E. of Peria, where Mahmoud of Gazna established a powerful kingdom, subdued by the Turks of Bochara, who in the 11th century
century founded the dynasty of the Seljuks. The sultans of this race gradually extended their power towards the W. and took possession of Armenia and Georgia, their first acquisitions in the Byzantine empire; and it is remarkable that they should have continued, when it is considered, that the Turks had subdued almost the whole of Asia Minor before the beginning of the 12th century. Nevertheless the extension of their dominion was restrained by the progress of the Crusades, which obliged them by the capture of Nice to remove the seat of power to Iconium. About the middle of the 14th century the Turks first passed into Europe, and soon after seized the greatest part of Thrace. In the 15th century their sultan, Bajazet, extended his conquests even to the Danube, and the provinces of Thrace and Macedonia fell under the Turkish sceptre, while Adrianople became the seat of their government.

Although the Turks, as we have above intimated, formed a part of the people denominated "the Scyths beyond the Imaus," and originally proceeded from the Altsian mountains, they were intermixed by their settlement on the Oxus with Sogdian and Bactrian tribes, and after their subversion of the Byzantine empire, in which they were assisted by European troops, many different nations joined their standard, and various circumstances, beside their intermarriages with Circassian women, contributed to render them a very mixed race. When the Roman arms had subdued many of those countries and cities which were comprehended under the widely extended Turkish empire, they became in the fifth century an important part of the Byzantine empire; and we shall follow Mr. Pinkerton in tracing their principal historical epochs. Accordingly he observes, that the first dawn of Turkish history preceding the reign of Othman, occurs A.D. 1290. In the reign of his successor, Orkan, the Turks took Gallipoli, and penetrated into Thrace, so that Adriano-ple was taken A.D. 1360; two years after which period, Amurath established the military bands called Janizaries. The Turkish power was for some time restrained after the famous battle near Ancyra, A.D. 1402, between Bajazet and Timur; nevertheless the dominion of the Turks increased in Europe, though they received several checks from the Hungarians under Huniades, and from the Albanians under the command of George Cafriot, called by the Turks Scanderberg. On the 20th of May, A.D. 1453, Constantinople was taken by the Turks. Crimea and the Morea were subjugated A.D. 1458; and in 1480, Otranto in Italy was captured by the Turks. The conquest of Egypt in 1517 made a considerable accession to the Turkish power; Rhodes submitted in 1522; and soon after the battle of Mohazzat, in 1526, the sultan Soliman took Buda. In 1552 the Turks seized the bannat of Temesvar, and they took Cyprus from the Venetians in 1571. Although after the famous naval engagement of Lepanto, in this year, their power at sea ceased to be formidable, they invaded Hungary with various successes, yet Europe obtained an interval of security by their wars with Perza; however, in 1642, the sultan Ibrahim took Azof from the Cuffacks, and about the middle of this century the Turks took possession of some Greek isles. Hungary became the scene of repeated Turkish and Austriam conquests until the year 1699, when, by the peace of Carlowitz, the Turks surrendered Transylvania to the Austrians, the Morea to the Venetians, and Azof to the Ruffians. By the peace of 1739 the Turks renounced Belgrade and Orlova, with parts of Servia and Walachia, formerly ceded to Austria, and Ruffia was constrained to abandon Azof. The last epoch of Turkish history would lead to a detail of the Ruffian wars against the Turks, and the decline of the Ottoman empire. We may here observe in general, that the Turkish dominion, wherever it has prevailed, has been detrimental in a very high degree to the best interests of humanity, and to every improvement, mental or moral, ecclesiastical or civil.

The religion of the Turks is the Mahometan; although in this European division of the empire, it is supposed that two-thirds of the inhabitants are Greek Christians. The Turkish sultan has for some centuries been the principal leader and support of that attachment to the religion of the Koran, which has been the flag and guard of the Mahometan faith. The Mahometan pontiff, or mufti, prelates at Constantinople. The next in rank to him are the moulahs, and from these are selected the inferior muftis, or judges, through the empire, and the candlefellers or chief justices. The next class of divines consists of the imams or parish priests, who perform the service of the mosques, or places of worship, while the cadis are judges annually appointed to administer justice in the towns and villages. The Turks have also their monks, denominated derviches, of four orders, dedicated to religious offices, public prayer and preaching. Of these, the Kadiri constitute a singular order, appearing almost naked, and displaying their devotion by frantic and extravagant dances. The Greeks retain their priests, bishops, archbishops, and patriarchs; but their church is in the lowest state of degradation, and its dignities are openly sold by the Turks.

As to the government of Turkey, the sultan is a despotic sovereign, but no restricted by the laws of the Koran, to which he is bound to submit, that many Christlian sovereigns are reckoned more arbitrary. The despotism of the monarch is balanced by a religious ariarchy; and many circumstances have lately occurred, such as the infractions of the Janizaries, and the power usurped by the pashas over their own provinces, which indicate the decline and approaching perdition of the empire. The Turkish laws are contained in the Koran, and in the comments of approved and renowned doctors, which have acquired the force of laws. The Turkish empire is chiefly guided by those of Abou-Hanife.

The number of inhabitants in Turkey in Europe has been estimated at 8,000,000, or about 43 to each square mile; but as the countries which it comprehends are intersected by many mountains and barren tracts, this estimate is supposed to exceed the truth. The navy is rated at about 30 ships of the line, and the army at 150,000 of ill-disciplined soldiers. The revenues of the whole Turkish empire are computed at about 7,000,000l. sterling, and the usual expense as not exceeding 5,000,000l. Their revenue is partly derived from a capitation tax on unbelievers, and from the "zeechat," or cullums, but principally from a tax on land of about 6s. an acre, called the "jizie." Upon the whole, the Turkish empire may be regarded as in a declining state, notwithstanding all its endeavours to secure the friendship of various European powers.

Of the manners and customs of the Turks, our limits will not admit of a minute detail. Marriage is a civil contract, managed by female mediation, and liable to dissolution at the pleasure of either party. Circumcision is performed at the age of 12 or 14. The dead are perfumed with incense, and buried in a kind of shroud, open at both ends, that the deceased may be able to fit up and reply to the interrogatories of the angels of death. The burial grounds are near the highways, and as one grave does not intrude upon another, they are very extensive. With regard to diet the Turks are moderate, and their favourite food is rice, of which they prepare their pilau, boiling it with
with mutton or fowl, their lappa, which is merely boiled rice, and the tcherebe, a kind of broth made of the same vegetable. The fish of the Archipelago is very good, and the beef tolerable; the hares, partridges, and other game are excellent. The meat is usually spread on a low wooden table, over which the master of the house pronounces a short prayer. The frugal repast is followed by fruits and cold water, and these are succeded by hot coffee and pipes with tobacco. The houses are expensive, and the most costly part of the furniture is the carpet that covers the floor. Their dres consists of a calico shirt, and the loose robe is fastened by a girdle, in which is stuck a dagger; while the tobacco-box, pocket-book, &c. are worn in the bosom. The robe is commonly made of English broad cloth, trimmed with fur. The shoes are light slippers. The dres of the women resembles that of the men, differing only in that of the head, which is a sort of bonnet, formed of pafteboard covered with cloth of gold, or other elegant materials, with a veil reaching to the eyes, and a fine handkerchief concealing the lower part of the face. In their perfons the Turks are very cleanly; the females, however, flain their nails with a red tincture. Their amusements are principally such as favour indolence, hunting and military exercises excepted. They are fond of reclining on an elegant carpet, or in a hot season by the side of a stream, and smoking the delicate tobacco of Syria. With opium they procure what they call "rief," or a placid intoxication, but a stronger dose produces irritation and fercity. Chefs and draughts are favourite games; whereas those of chance are regarded as immoral. Their coffee-houses and baths afford other means of amusement; and the beimar, or festival succeeding their long lent, is a feaon of universal dilipation.

The Turkifh language is far inferior to the Persian or Arabic, and is formed by a mixture of several dialects. Literature is not wholly neglected, but they have some schools and libraries. In the 18th century a printing-office was set up at Constantinople by Ibrahim Effendi, which was at first much oppofed, but afterwards allowed to print all kinds of books, thofe on religion excepted. Their market for books contains many thop well supplied with Oriental MSS.; and they have their ancient poets, hiiftorians, and divines, though of little estimation compared with thofe of Persia or Arabia. Education, however, is little encouraged; fo that ignorance forms the diftinguifhing character of the nation. Law, connected with their theology, is the chief fubject of their study; but they have no infitution that merits the appellation of a college or university.

The chief city of European Turkey, and of the whole Turkifh empire, is Constantinople; next to this in dignity and extent is Adrianople, two miles in circuit, and poffeffing several fpendid works, and a confiderable share of commerce; Philippopolis is a city of confiderable importance; Sofia, though meanly built, contains about 70,000 inhabitants, and has confiderable trade; Silifria in Bulgaria, on the Danube, contains about 60,000 fouls; and Buccharof, the chief city of Walachia, is faid to have the fame number; while thofe of Jaffy or Yaffy, the principal town of Moldavia, and Bender of Baffarabia, are each confiuated only at 10,000 or 14,000. Bragd, the capital of Servia, is fuppofed to contain about 25,000 inhabitants; and thofe of Banjaluca, which is a confiderable town in Bofnia, are confiuated at 18,000. In the southern provinces we may first mention Salonica, containing 60,000 inhabitants, and diftinguifhed by a confiderable commerce; Lariffa, 80 British miles to the S., an inland town, containing 25,000 fouls; and Atini, the ancient Athens, of small population. See each article.

If we except the ferglios and royal palaces, the chief edifices in Turkey are the mosques and caravanferas.

The manufactures and commerce of Turkey in Europe are chiefly conducted by foreigners. The Levant trade almost entirely centres in Smyrna and the Asiatic shore.

The manufactures principally exported from European Turkey are inconsiderable, being chiefly carpets and some few other articles; but the products are currants, figs, faftron, flutuari marble from Pafos, filk, and drugs.

The climate and feasons vary with the different regions comprehended within the limits of European Turkey; and to these we refer for an account of them. The general appearance of Turkey in Europe is magnificent, here and there interpersed with delicious plains and vales; enriched by the Danube, which interfets its provinces, and the numerous gulfes of the Archipelago and Mediterranean. The foil is generally fertile, the northern parts producing wheat and rich paffure, the middle and southern abundance of rice; but agriculture, as well as almost every other art and science, is neglected by the Turks. The principal rivers of Turkey are the Danube, already mentioned, the Marits or ancient Hebrus, the Vardari or ancient Axios, the Efsir or ancient Oesius; the Morava or ancient Margus, and the Drin, rising in N. of Albania, and falling into the Save. Budzak and Walachia, as well as Albania and the southern provinces, contain confiderable lakes. The chains of mountains in Turkey are numerous and extensive. Here we might mention, if they were not elsewhere noticed, the Carpathian chain, anciently called the Baltaic Alps; the grand range of the Harom with its branches; and mount Athos of ancient celebrity. European Turkey also abounds with forests. Of its zoology we shall merely notice the jackal, the camel, and foarfe, and also its cattle and sheep, which are numerous and of different kinds. Its mineralogy has been little investigated. The gold mines of Philippi, about eighty miles E. of Salonica, produced in the time of Philip of Macedon annually about 1000 talents, or 2,880,000 florin; and silver mines were found in Attica, and other quarters.

The chief islands belonging to Turkey in Europe are those of the Archipelago; for an account of them we refer to their names, fuch as Crete or Candia, Negroport, the Cyclades, Sporades, Lemnos, &c. &c.

Turkey in Asia extends from the shores of the Aegean sea or Archipelago, to the confines of Persia, through a space of about 1050 British miles. The boundaries towards Persia are the mountains of Ararat and Elwend. Towards the N. the Turkish territories are divided from the Russian by the river Cuban and the chain of Caucasus; in the S. they extend to the junction of the Tigris and the Euphrates, which last river separates, for a confiderable interval, the Turkish possessions from those of the Arabs. The diftance from the Cuban to the junction of the Tigris and Euphrates may be efimated at about 1100 British miles. This extensive empire is divided into nine or ten provinces, viz. Natolia W., Karaman S., and Roum N.E. of Armenia are Guria or Guriel, Mingrelia, and the Akbas of Caucasus, the ancient Circassias. To the S. of Armenia, also denominated Turcomania, are Curdlan and Irak-Arabi, part of ancient Persia, round the celebrated capital Bagdad. The ancient Mefopotamia, between the Tigris and the Euphrates, now partly corresponds with the province of Algezira; and Syria, or Soria, comprehends the celebrated countries along the easterm extremities of the Mediterranean. These provinces are subdivided into governments, arbitrarily admiinistered by pashas. The original population of these regions consisted chiefly of Scythians blended
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blended with some few Assyrians from the south. See *TURK*, and *Turkey in Europe*, supra.

The prevalent language is the Turkick, to which we may add the modern Greek, together with the Arabic, Syrian, Periian, and Armenian, with the various dialects used by the tribes on the Black sea, and indicating the diversity of population. To the account already given of the historical epochs of Turkey, we may here subjoin the following from Pinkerton. Armenia and Georgia were subdued by the Turks in the eleventh century, and the whole of Asia Minor soon followed. Their kingdom of Roum extended from the Euphrates to Conflantinople, and from the Black sea to the confines of Syria. Successive war-like princes acquired additional territory from the Manemukes of Egypt and the Periians. Syria, formerly an appendix of Egypt, was conquered by Selim II. in 1516; Tauris and Diarbekir, the last of which had formerly belonged to Peria, were subjugated by the same monarch; and in 1589 Abbas, the great sovereign of Peria, was obliged to yield three provinces to the Ottomans, though he extended his conquests to the eait and Bagdad, with the surrounding province of Irak-Arabi, became subject to the Turks in 1638. The present limits seem to have been fixed by the treaty between the Porte and Peria in 1736, since which period the Turks have been chiefly employed in defending themselves against the Ruffians; but such had been their ascendency over Peria, that in 1727 they had acquired the territory from Erivan to Tauris or Tebriz, and thence to Hamadan, a boundary which seems to be more precisely marked by nature than the pencil.

The antiquities of Asiatic Turkey are those of Balbec and Palmyra or Tadmor in the desert, and those that have been discovered in the seite and plain of Troy; for which see these articles.

The Turkick empire in Asia is estimated at 470,400 square miles, and the population at 10,000,000; which, allowing 3,000,000 for the European part, will render the total 18,000,000. The reader will find a sketch of the manners and customs of the inhabitants of Asiatic Turkey under this article, which we shall now proceed to mention. The Curds or Kurds pass in summer from Moufoul to the sources of the Euphrates, and they are never punished either for robbery or murder. They are a pastoral people, who conduct their herds from one country to another, and extending sometimes as far west as Tocato; where Tournefort, in his time, found other hordes called Turkomans. The Armenians, though Eutychian Christians by profession, and of course irreconcilable enemies of the Greeks, are distinguished by many singular manners and customs. They are reprented as a sensible and polite people; and by their frugality and enterprise, are admirably qualified for conducting the Levant trade, which is chiefly their province. For an account of the Druses and Maronites, see these appellations. In the northern extremities of Asiatic Turkey, there are many tribes which have adopted singular practices. Six or seven languages are said to be spoken in the country between the Euxine and the Caspian. The Abkhas, called by the Circassians " Kuth-Haipp," a people beyond the mountains, retain some traces of Chrisitianity. The territory of the Tcherkausses, or Circassians, is extensive: part of it is subject to Ruflia, but their manners are invariable. The princes cannot pledge lands, and their nobles are chosen by the princes from the vaflals, or third clafs. Public measures are proposed by the prince, and debated by the nobles and deputies of the people, on a spot defined for this purpose, near the royal residence. The agriculture of these people is barely sufficient for their own consumption; but they export sheep and horses, and slaves taken in their predatory excursions. The beauty of their women has been much extolled. Having received a suitable education, and formed from their youth according to their own standard of beauty, they are sold from 20l. to 100l., and sometimes at a much higher price. Soon after the birth of a girl, a belt is fewed round her wailt, and when this furth, it is replaced by a second; so that their waists become very small, and their shoulders broad, which is a defect little regarded, on account of the beauty of their breasts. On the wedding-night the belt is cut by the husband with a dagger, an operation which is sometimes accidentally fatal. The bride-groom pays for his bride a present, or " kelym," consisting of arms, or a coat of mail; but he must not then, nor on any future occasion, see her, or cohabit with her, without the greatest mystery. The young men recommend themselves by their activity and address in military exercises; and those who are most alert have the privilege of choosing the most beautiful partners. Their musical instruments are a long flute, with only three stops, a species of mandoline, and a tambourine. Their dances are in the Asiatic style, with little gaiety or expression. The women pride themselves on the courage of their husbands, and liberally recompense them when they are defeated. It is their business to polich and take care of the armour of the men. The habitation of a Circassian consists of two huts, because the wife and husband are not supposed to live together. At meals the whole family is assembled. Their food consists only of a little meal, pulse made of millet, and a kind of fermented beer, prepared from the same grain. The Manemukes of Egypt are slaves regularly imported from Circassia and Georgia. In Imeritia, Mingrelia, and Guriel, as well as in Georgia, which forms a Periian province, the barons have power of life and death over their vaflals, and form a very powerful aristocracy, very formidable to the prince, who resides at Kutais. The religion of all these provinces is the Greek; but they can scarcely be regarded as subject to Turkey. It may be observed in general, after this brief detail, that the most striking feature of manners and customs in the Turkish empire, is that half the people may be considered as somewhat civilized, while the other half may be regarded as pastoral wanderers ranging over extensive wilds. Next to the capital of the Turkish empire, the next city of Asiatic Turkey in dignity and importance is Aleppo, containing about 250,000 inhabitants, where the manufactures of silk and cotton are flourishing, and whither large caravans frequently return from Bagdad and Baffora, with the products of Peria and India. Damascus is supposed to contain 180,000 souls: Smyrna may be regarded as the third city in Asiatic Turkey, and contains about 120,000 souls: Prucha is a beautiful city at the northern bottom of mount Olympus, and its number of inhabitants is estimated at about 60,000: Magnifici, or Magnesia, is also a city of some repute in this quarter of the empire; and Kircahatch has risen to importance by the cultivation of cotton, being situated about 40 miles N.E. in Angora contains of Magniffi, on the route to Prucha: Angora contains 50,000 inhabitants, and trades chiefly in yarn for shawls, and in Angora furfs of its own manufacture from the hair of a breed of goats: Tokat is flourishing, and its inhabitants are about 60,000; its manufactures are filk and leather, and chiefly copper utensils: Bafra, or Baffora, contains on the estuary of the Euphrates and Tigris, contains about 50,000 inhabitants, and is a place of great consequence; as the various products of Europe and India are here exchanged for those of Peria; and opium caravans
caravans proceed from this most central port of the Oriental trade to the chief cities of Asiatic Turkey:—Bagdad, the seat of the caliphs, and scene of many Eastern fictions, is now reduced to a town of about 40,000 inhabitants:—the ancient and celebrated city of Jerusalem is now a mean town, chiefly depending on the piety of pilgrims; and towards the frontiers of Peria frequent wars have spread defoliation; nevertheless Erzeron, the capital of Armenia, has still about 25,000 inhabitants; but Kars, the extreme town upon the frontiers of Peria, though tolerably fortified, is an unconsiderable place. The chief articles of commerce in Asiatic Turkey are carpets, rhubarb, and several other drugs. The Levant or Turkey trade was formerly of great consequence to Great Britain; but from the middle of last century it has been more advantageous to France. The state of the Levant trade chiefly carried on at Smyrna appears from the following documents:

France sends coffee, sugar, indigo, clothes, and cochineal.

England, shalloons, muslins, iron, tin, spices, refined fuggars.

Holland, muslins, India goods, clothes, spices.

Austria, from Trieste, cloths, glafs, hard-ware, linen, wood, amber.

Raffia, iron, corn, caviare, dried fish, furs.

Italy, filks and velvets, wax and paper.

European Turkey, wines, filks, tobacco.

Natolia and Syria, woolens, cottons, filks, drugs.

Egypt, coffee of Yemen, rice.

Barbary, dates, woolen caps from Tunis, butter, wax.

The port of Marseilles, which carries on the French trade with Smyrna, draws the wool and cochineal from Spain; but this country has lately begun to conduct her own commerce. Venice, under the Aulonian power, might become the chief port of the Levant busines. Of the French commerce, the chief staple is coffee: but this cannot be re-formed with much vigour till France shall acquire a greater naval power.

Upon the whole, says Pinkerton, if the commerce of Smyrna be at present valued at fifty millions of francs, the English trade for thirty millions, the Dutch for ten, while France shares the remaining ten millions with the emperor, Italy, and other states above-mentioned.

The climate of Asin Minor has been always considered as excellent. The heat of the summer is tempered by numerous chains of high mountains, some of which are covered constantly with snow. The aspect of Asiatic Turkey is mountainous, intermingled with spacious and beautiful plains, which afford pasturage to the numerous flocks and herds of the Turkomans. The soil is various; but the chief agricultural products are wheat, barley, and durra. It abounds also with grapes, olives, and dates. In Syria the agriculture is deplorable, and the peasant is in a wretched condition, being fold, as in Poland, with the soil, and their constant fare being barley bread, onions, and water.

The principal river of Asiatic Turkey is the Euphrates, the course of which may be estimated at about 1400 British miles: next in importance is the Tigris, whose course is about 800 miles; and both these rivers are navigable to a considerable distance from the sea. The third river is called by the Turks Kizil Irnak, the celebrated Halys of antiquity, rising in mount Taurus, and discharging itself into the Euxine sea on the W. of the Gulf of Sanfom: the river Sacaria, or ancient Sangarius, rises about fifty miles S. of Angora, and joins the Euxine about seventy miles E. of Constantinople: next in rank is the Mxander, rising N. of Apannea, and winding its course about 250 British miles: the Sarabat is the ancient Herusma, famous for its golden sands. The chief river of Syria is the Orontes, now called Oron or Afs, which runs into the Mediterranean.

The lakes of Asiatic Turkey are numerous. The most remarkable are the Van and Urmiannah: others are the Dead sea in Syria, fifty miles long, and twelve or thirteen in breadth: that of Raekama, S. of Hilla and the ancient Babylon, about thirty miles long, and flowing into the Euphrates; the Tatta, or Palus Salfa of D'Anville, a saline lake about seventy miles long, and one or two in breadth towards the centre of Asin Minor, being the modern Toulla or salt lake: that of Ulabad in Natolia, widely denominated the lake of Apollonia, twenty-five miles in circumference, and in some places seven or eight miles wide, sprinkled with several inlets and peninsulas, and the grand receptacle of the waters from mount Olympus: the largest of these isles is called Abouillona, probably from the ancient name of the city which stood upon it: and about fifty miles to the N.E. was the lake anciently called Acanus, now Innik.

The mountains of Asiatic Turkey are of ancient celebrity: such are the Taurian chain; the Caucaian mountains, ranging from the mouth of the river Cuban in the N.W. to the place where the Kur enters the Caspian in the S.E., and furnishing various chains, such as the Antitaurus of antiquity, and others branching out into Peria; mount Taurus, terminating at the Euphrates and desarts of Algezira: the chain of Taurus is now called Kurnun, and extends about 600 miles E. and W. from the Euphrates to the vicinity of the shores of the Archipelago. These and other mountains of Asiatic Turkey are conjectured to be calcareous; while the Caucasus alone aspires to the rank of a granitic or primitive chain. Towards the E. of Armenia is Ararat, properly belonging to Persia; and beyond Ararat are branches of the Caucaian chain, to which probably belongs the mountains of Elwend, or Niphates of antiquity. In Syria, the most celebrated mountains are Lebanon or Lebanon, and Anti Lebanon. On the eastern side of the Archipelago was Olympus (now Ketifik Dag); and 140 miles W. of Olympus is mount Ida, the branch of which was called by the ancients Garganos, which gave source to the Granicus, the Simos, and other streams, most of which directed their course to the N., and extended in western prominences to the Hellepont, amidst which was situated the celebrated city of Troy. Other remarkable mountains on this classical shore, as it has been denominated, were those of Rhea, Pedapus, &c. &c. S. of the Mxander, the Taurus detaches a chain called Cadmus and Grins, bending towards the isles of Cos and the Cyclades. The numerous mountains of Asiatic Turkey are frequently clothed with immense forests of pines, oaks, beeches, elms, and other trees; and the southern shores of the Black sea present many gloomy forests of great extent. The inhabitants are licenced to supply with abundance of fuel, in defect of pit-coal, which has not been explored in any part of Asiatic Turkey. Sudden conflagrations arise from the heathful wafle of the caravans, which, instead of cutting off a few branches, set fire to a standing tree. The extensive provinces of Natolia, Syria, and Melpontainia, have been little accessible to European curiosity, since their reduction under the Turkish yoke. In Pinkerton's Geography we have a catalogue of those plants and trees that have been found wild in the Asiatic part of the Ottoman territory. Several dyeing drugs and articles of the materia medica are imported from the Levant, among which are madder, and a variety called alizar, which grows about Smyrna, and affords a much finer red dye than the European kind; jalap, fummony, sebeften, the ricinus, yielding
TURKEY.

yielding by expression castor oil, squirting cucumber, colocynthita, opium poppy; and spikenard. The best horsefles in Asiatic Turkey are of Arabian extract; but mules and asles are more generally used. The bee is scarce and bad, the mutton superior, and the kid a favourite repast. Other animals are the bear, tiger, hyena, wild boar, jackal, and dogs in great abundance. On the summits of Caucaus is found the ibex, or rock-goat; at Angora, tangerine goats and cats; the gazel, and deer and hares in great abundance are found in Afia Minor. The partridges are generally of the red-legged kind, larger than the European; fih is plentiful and excellent. The mineralogy of these extensive provinces has not been yet sufficiently explored. The most noted mineral waters are those of Prufa, at the bottom of Mount Olympus: the baths are splendid, and paved with marble. Walachia furnishes many other hot-springs.

The chief islands belonging to Asiatic Turkey, situated in the Archipelago, are Mitylen, Scio, Samos, Cos, and Rhodes. Along the southern shores of Afia Minor are some small islands, such as that of Caflil Rosso, S.E. of Patira; but these are of no moment compared with Cyprus, about 160 miles long and nearly 70 at its greatest breadth; the chief cities of which are Nicofa and Famaguta.

Some geographers, in opposition to the testimony of travellers, have considered Egypt as a Turkish province; whereas it was only occasionally tributary, and subject to the military aristocracy of the beys. Some of the maritime Mahometan powers have likewise afflicted the Porte with ships in time of war; but they cannot be regarded as subject to the Ottoman sceptre.

TURKEY. Coinage, &c. As the Turks, though aspiring to a very ancient derivation, comprehending Tartars and Moguls, (fee Türk,) are merely a mixture of Sarmaate or Slav, Arabs and Greeks, which began to form a nation in the fourteenth century, they seem to have issued no coins till they feizied Constantinople in 1453; and their coins resemble those of Peria and Arabia, having merely inscriptions on both sides. Turkey keeps accounts in piastres, commonly called grouch by the Turks, and by the English dollars. Each piastre is divided into 40 paras, and each para into 3 aspers. Sometimes, instead of these real coins, the piastre is divided into 80 or 100 imaginary parts, called aspers, or minus. Jux or juck is a sum of 100,000 real aspers; a chife or parwe is 500 ditto. The gold coins of Turkey are the sequin or chequen (fee Séquin,): the silver coins are the two-dollar piece of 80 paras; the almiticelle of 60 paras; the dollar or piastre of 40 paras; the zolotta or izolotta of 30 paras; the roup of 10 paras; the bellick of 5 paras; the para of 3 aspers; and the asper. The Turkish coins, notwithstanding the regulations of 1780, when a single piastre weighed 5½ drachms, or 277 English grains, have been gradually deteriorated; so that a piastre of the latest coinage, weighed and assayed by the king's alay-mater of the Mint, was reported to be as follows: weight 8 dwts. 6 grs., fineness 5 oz. 6 dwts. worse than the English stand; hence its fineness was 47 car. 2 grs. Turkish, and its value in sterling 13½d.

The Turkish chequen or pound, with which gold, silver, diamonds and precious stones are weighed, is divided into 100 drachms, and the drachm into 16 kiltots or carats, or 64 grains. A chequen weighs 10 oz. 5 dwts. 3 grs. Troy weight, and a drachm 494 grs. disto; so that 48 chequens = 41 lbs. Troy very nearly.

The cantaro, quintal or kintel contains 44 okes, or 100 rottoli; the oke, 4 yufrdomes or chequens, or 400 drachms; the rottolo, 176 drachms. A metical is 3½ drachms. The kintel of cotton-yarn is 45 okes.

The cantaro weighs about 125 lb. avoirdupois; the oke, 21 lbs. 13 oz.; the rottolo, 19½ ounces; the chequen, 11½ ounces avoirdupois.

Silks from Peria are weighed by the batom of 6 okes, or 2400 Turkish drachms, or 16 lbs. 14 oz. avoirdupois; silks from Brufa are weighed by the taffee of 610 Turkish drachms, or 4 lbs. 4 oz. 10 drs. avoirdupois.

The chequen of goats' wool is 800 Turkish drachms, or 5 lbs. 10 oz. avoirdupois; the chequen of opium 250 Turkish drachms, or 27 oz. 10 ds. avoirdupois.

Corn is measured by the quilet or kille, weighing, in wheat, about 22 okes, or 60 lbs. avoirdupois; 4 killos make 1 fortin: 8½ killos answer nearly to 1 English quarter. A killo of rice is 10 okes.

Oil and other liquids are sold by the meter, or almad: the meter weighs 8 okes, or 22½ lbs. avoirdupois; and 8 almadas equal 11 English gallons.

The pic or pike is of two forts: the longest, called halebi or archim, with which silks and woollens are measured, is 314 French lines, or 27½ English inches long; the other, called endafl, with which cotton goods and carpets are measured, is 3 per 100 shorter. But, in the general course of European trade, the pike is reckoned at 2½ths of an English yard.

The exchanges of Constantinople with the principal commercial places in Europe are as follow: Constantinople gives:

Amsterdam 60 paras, or more, for 1 florin current.
Genoa 23 paras, or more, for 1 lira fuori banco.
Hamburgh 1 piastre, for 24 grotes Fleming banco, more or less.
Leghorn 145 paras, or more, for 1 pezza of 8 reali.
London 18 piastres, or more, for 1/. sterling.
Marcellas 1 piastre for 1 franc 45 centimes, or more.
Naples 120 paras, or more, for 1 ducat regia.
Paris 210 piastres, or more, for 100 ecus of 3 livres, or 300 francs.
Venice 360 paras, or more, for 1 sequin of 2 lire piccoli.
Vienna and Trieste 50 paras, or more, for 1 florin current.

The exchanges between Constantinople and other trading places, where Turkish money is used, are done at a premium of 10 per cent. more or less, in favour of Constantinople.

Bills between Constantinople and the principal trading places of Europe are commonly drawn at 31 days' sight; but from one place, in Turkey, on another, at 11 days' sight. Some European merchants pay their bills on the very day on which they become due; and others take as many days grace as are allowed in their respective countries.

Trieste keeps accounts in florins or florins of 60 cruzenters; also in lire of 20 foldi; the cruzenter being subdivided into 4 pfnings, and the foldo into 12 denari. These monies of account are valued in Austrian currency, in Trieste currency, and in Valuta di Piazza: the first is chiefly used in foreign exchanges, the second in wholesale trade, and the third in retail business. A florin Austrian currency is worth 5½ lire of Trieste currency, or 5½ of lire di piazza. For the coins, &c., see VIENNA.

Tripoli keeps accounts in piastres of 13 grimellini, or 52 apfers: the grimellini is valued at 6 sous Tournois, which makes the piastre of Tripoli worth 3½ 36½ stersling. The weight for gold and silver is called Metael (which fee); the weight for gold and silver is called Metael (which fee); the weight for gold and silver is called Metael (which fee); the weight for gold and silver is called Metael (which fee); the weight for gold and silver is called Metael (which fee).
answer to 158 lbs. peo fottle of Venice, or about 112 lbs. avoirdupois. The corn meafure, called cafino, contains 20 tiber, and is equal to 4 flla of Venice: so that 13 caf-
fisi = 15 English quarters. The oil meafure, called mrfaro, weights 42 rotti, or about 47 lbs. avoirdupois. The pic, or elf, is equal to 28 of Genofe palm, or 215 English inches.
Kelly's Universal Cambiff.
Turky, a town of the state of New Jersey; 13 miles N.N.W. of Ambloy.
Turky Creek, a river of South Carolina, which runs into the Cangaree, N. lat. 34° 50'. W. long. 81° 35'.—
Alfo, a river of America, which runs into the Ohio, N. lat. 38° 22'. W. long. 83° 12'.
Turky Foot, a township of Pennsylvania, in Somerft countv, containing 975 inhabitants.
Turky Hill, a township of Illinois territory, in the county of St. Clair, containing 1151 inhabitants.
Turky Point, a cape on the coat of Maryland, at the mouth of the Susquehanna, where it takes the name of Chefs-
peak. Here the British army landed in August 1777, as they were advancing to Philadelphia; 16 miles S.E. of Elkton.—Alfo, a cape on the N. coat of Lake Erie.
Turky River, a river of Louisiana, which runs into the Misfipilipi, N. lat. 42° 10'. W. long. 91° 55'.
Turky Town, a town of the state of Georgia; 60 miles N. of Oakfuflee.
Turky, Meleagris, in Ornithology, a diftinct genus of birds, of the order of the Galliue. For the diftinguifhing
characters and fpecies, fee MELEAGRIS.
Wild turkeys prefer a famesens of colouring; the tame varying; but the black approaching neareft to the original
flock. Of late a beautiful kind has been introduced into England of a snowy whitenefs, finely conftraining with its
red head. The ufual weight of the wild turky is about 30 lbs.
The paflions of the males are strongly exprifed by the change of colours in the fhefly fubstance of head and neck,
which alters to red, white, blue, and yellowish, as they are diftinctly affected. One cock ferves many hens, who retire
to an obfcurc place in order to fit, the cock being apt to break the eggs. The females are very affectionate to their
young, and though the eggs addle, will almoft perifh with hunger, unlefs they are removed, before they will quit the
net.
Turkeys delight much in the feeds of nettleis, but thofe of
the purple fox-glove are fatal to them. They are fupid,
quarrelfome, and cowardly birds; they are elft runners,
but indifferent flyers; they love to perch on trees, and in a
wild iftate, get fo high as to be beyond the reach of the
mufter.
In the iftate of nature they go in flocks, even of five hund-
dred, and feed much on the fmall red acorns, frequenting
the fmpafs of their native country, where they rooff, but at
fun-rising repair to the dry woods in fearch of acorns and
berries. The fhefly of the wild turky is faid to be preferable
to that of the tame, but redder.
Wild turkeys are now very rare in the inhabited parts of
America, but are found in numbers in the dilant and moft
unfrequented fots.
The Indians make a very elegant clothing of the feathers,
twifling the inner webs into a firm double thread of hemp, or inner bark of the mulberry-tree, and working it like matting; it appears rich and glossy, and as fine as a filk
flag. They awl make fans of the tail, and the French of
Louisiana were wont to make umbrellas by the junction of
dof the tails.
Turkeys are natives of America, or the New World,
and of course unknown to the ancients: this is a point which
Mr. Peffant has eftablifhed by an elaborate induction of
various particulars in the history of these birds; evincing
that they are natives neither of Europe, Asia, nor Africa.
The first precise defcription of them is given by Ovidio, in
1525; they are also mentioned as natives of the main land
of the warmer parts of America, by Fernandez, phyfician to
Philip II., who wrote between the years 1555 and 1568: they
were also frequently feen, both in their wild and tame iftate,
by Dampier, in the province of Yucatan, now a part of
Mexico.
In North America they were obferved by the firft difco-
erers. They were firft introduced into Europe from Mexico
or Yucatan, and imported into England, probably from Spain,
as early as the year 1524. Since that period they have been
foeefifully cultivated in this kingdom, fo that in the year
1585 they made a dish even in our rural feafts. But in
France they were fo rare, that the fift which was eaten in
that kingdom appeared at the nuptial feast of Charles IX.
in 1570. Phil. Tranf. vol. Ixxi. part i. p. 67, &c. See POULTRY.
Turky-Beer Tree, in Botany. See CORDIA.
Turky Company and Silk. See Comany and SILK.
Turky Leather. (See Morroco Leather.) The pro-
ccefs for dyeing leather red and yellow, as practifed in Tur-
key, with the directions for preparing and tanning the skins,
as communicated by Mr. Philippo, a native of Armenia, who
obtained 100l. and a gold medal from the Society for the
Encouragement of Arts, as a reward for the discovery,
are as follow.
1. Firft Preparation of the Skins, both for Red and Yellow
Leather, by drenching them in Lime.—Let the skins, dried
with the hair on, be firft laid to soak in clean water for three
days; let them then be broken over the fleece-fide, put into fresh
water for two days longer, and afterwards hung up to drain
half an hour. Let them now be broken on the fleece-fide,
limed in cold lime on the fame fide, and doubled together
with the grain-fide outward. In this fiate they muft be
hung up within-doors over a frame for five or fix days, till
the hair be leafe; which muft then be taken off, and the
skins returned into the lime-pit for about three weeks. Take
them out, and let them be well worked fheft and grain, every
fixth or feventh day during that time; after which, let them
be wafted ten times in clear water, changing the water at
each wafting. They are next to be prepared in drench, as
below mentioned.
2. Second Preparation of the Skins for both the Red and Yel-
low Dyes by drenching.—After squeezing the water out of the
skins, put them into a mixture of bran and water, warm as
new milk, in the following proportions; viz., about three
pounds of bran for five skins, and water fufficient to make
the mixture moderately fluid, which will be about a gallon
to each pound of bran. In this drench let the skins lie three
days; at the end of which time they muft be well worked,
and afterwards returned into the drench two days longer.
They muft then be taken out and rubbed between the hands;
the water fqueezed from them, and the bran scraped off clear
from both fides of the skins. After this they muft be again
wafted ten times in clear water, and the water fqueezed out of
them.
Thus far the preparatory proces of all the skins, whether
intended to be dyed red or yellow, is the fame; but after-
wards thofe which are to be dyed red, muft be treated as
follows.
3. Preparation in Honey and Bran of the Skins that are to
be dyed Red.—Mix one pound of honey with three pints of
lukewarm water, and flir them together till the honey is
diffolved.
4. Preparation in Salt of the Skins to be dyed Red.—After the skins have been fermented in the honey and bran, as above mentioned, let them be taken out of that mixture on the eighth or ninth day, and well rubbed with dry common sea-salt, in the proportion of about half a pound to each skin; the salt must be well rubbed and worked with them. This will make them contract again, and part with a further considerable quantity of moisture; which must be squeezed out by drawing each skin separately through the hands. They must next be feraped clean on both sides from the bran, superfluous salt, and moisture that may adhere to them. After which dry salt must be stirred over the grain-side, and well rubbed in with the hand. They are then to be doubled, with the flesh-side outwards, lengthwise from neck to tail, and a little more dry salt must be thinly stirred over the flesh-side, and rubbed in; for the last operations, about a pound and a half of salt will be sufficient for each skin. They must then be put, thus folded on each other, between two clean boards, placed flopping, breadthwise; and a heavy weight laid on the upper board, in order gradually to press out what moisture they will thus part with. In this state of pressure, they must be continued two days or longer, till it is convenient to dye them, for which they will then be duly prepared.

5. Preparation of the Red Dye, in a proper Proportion for four Skins.—Put eight gallons of water into a copper, with seven ounces of fennel tied up in a linen bag. [Shenam is a drug much used by dyers in the East; and may easily be procured at any of the ports of Syria and Africa, in the Levant. It is the Eastern jointed kali, called by botanists Salicornia; and grows in great plenty in those and other parts of the East.] Light a fire under a copper; and when the water has boiled about a quarter of an hour, take out the bag of fennel, and put into the boiling fluid or lixivium, 1 lb. two drachms of alum; 2 1/2, two drachms pomegranate bark; 3 gills, three quarters of an ounce of turmeric; 3 gills, three ounces of cochineal; 5 gills, two ounces of loaf-fugar. Let the whole mixture boil about six minutes, then cover the fire, and take out a quart of liquor, putting it into a flat earthen pan; and when it is as cold as new milk, take one skin, folded lengthwise, the grain-side outwards, and dip it in the liquor, rubbing it gently with the hands. Then taking out the skin, hang it up to drain, and throw away the superfluous dye. Proceed in the same manner with the remaining three skins; repeating the operation of each skin separately, eight times, squeezing the skins by drawing them through the hands before each fresh dipping. Lay them now on one side of a large pan, let flopping, to drain off as much of the moisture as will run from them without pressure, for about two hours, or till they are cold; then tan them as below directed.

6. Tanning the Red Skins.—Powder four ounces of the belt white galls in a marble mortar, mixing it through a fine sieve. Mix the powder with about three quarters of water, and work the skins well in this mixture for half an hour or more, folding up the skins fourfold. Let them lie in this tan for 24 hours; when they must be worked again as before; then taken out, scraped clean on both sides from the first galls, and put into a like quantity of fresh galls and water. In this fresh mixture they must be again well worked for three quarters of an hour; then folded up as before, and left in the fresh tan for three days. On the fourth day they must be taken out, washed clean from the galls in seven or eight fresh quantities of water, and then hung up to dry.

7. Manner of dressing the Skins after they are tanned.—When the skins have been treated as above, and are very near dry, they should be scraped with the proper instrument or serrate on the flesh-side, to reduce them to a proper degree of thickness. They are then to be laid on a smooth board, and glazed by rubbing them with a smooth glass. After which they must be oiled, by rubbing them with olive-oil, by means of a linen rag, in the proportion of one ounce and a half of oil for four skins; they are then to be grained on a graining-board, lengthwise, breadthwise, and cornerwise, or from corner to corner.

8. Preparations with Galls, for the Skins to be dyed Yellow.—After the four skins are taken out of the drench or bran, and clean washed as before directed in the second article, they must be very well worked, half an hour or more, in a mixture of a pound and a half of the belt white galls, finely powdered, with two quarts of clean water. The skins are then to be separately doubled lengthwise, rolled up with the flesh-side outwards, laid in the mixture, and close pressed down on each other, in which state they must continue two whole days. On the third day let them be again worked in the tan; and afterwards scraped clean from the galls, with an ivory or brass instrument (for no iron must touch them). They must then be put into a fresh tan, made of two pounds of galls finely powdered, with about three quarts of water, and well worked therein fifteen times. After this they must be doubled, rolled up as before, and laid in the second tan for three days. On the third day, a quarter of a pound of white sea-salt must be worked into each skin; and the skins doubled as before, and returned into the tan, till the day following, when they are to be taken out, and well washed five times in cold water, and four times in water lukewarm. The water must be then well squeezed out, by laying the skins under press, for about an hour, between two boards, with a weight of about 200 or 300 pounds laid upon the uppermost board, when they will be ready for the dye.

9. Preparation of the Yellow Dye, in the proper Proportion for four Skins.—Mix six ounces of caffia or ghebra, or the berries of the Eastern rubus, with the same quantity of alum; and pound them together till they be fine, in a marble or brass mortar, with a brass pestle. [The ciafia is the berries of the Eastern rubus, or buckthorn-tree; and may be had at Aleppo, and other parts of the Levant, at a small price. The common Avignon or yellow berries may be substituted, but not with so good an effect; the ciafia being a stronger and brighter yellow dye, both for this use and also that of colouring paper-handings, &c.] Then dividing the materials, thus powdered, into each equal part of four ounces each, put one of those parts into about a pint and half of water, in a china or earthen vessel, and stir the mixture together. Let the fluid stand to cool, till it will not scald the hand. Then spreading one of the skins flat on a table, in a warm room, with the grain-side uppermost, and the flesh-side downwards, rub it well with a smooth glass; let it continue for about three hours, then hang it up to dry.
side uppermost, pour a fourth part of the tinging liquor, prepared as above directed, over the upper or grain-side, spreading it equally over the skin, with the hand, and rubbing it well in. Afterwards do the like with the other three skins, for which the mixture first made will be sufficient.

This operation must be repeated twice more on each skin separately, with the remaining eight ounces of the powder of the barries and alum, with the above-mentioned dye proportions of hot water, put to them as before directed.

The skins, when dyed, are to be hung up on a wooden frame, without being folded, with the grain-side outwards, about three quarters of an hour to drain; when they must be carried to a river or stream of running water, and well washed therein six times or more. After this they must be put under pressure for about an hour, till the water be well squeezed out; afterwards the skins must be hung up dry in a warm room.

This being done, the skins are to be dressed and grained as before directed for those dyed red; except the oiling, which must be omitted.

The processes for dressing and preparing the skins of lambs, sheep, goats, and other thin hides are various, according to the nature of the article. This branch of the manufacture supplies the large demand of white and dyed leather for gloves, the leather called morocco of different colours and qualities, used for coach-linings, book-binding, pocket-books, &c. This leather is applicable to a variety of other purposes. The white leather is not tanned, but finished by the mere procés of tawing; but the coloured leather receives a tanning, generally by sumach, independent of the other materials. The previous preparation of each, or that in which the skin is thoroughly cleaned and reduced to the state of simple membrane, in which it is called pelt, is essentially the same, whether for tawing or dyeing.

It is thus performed at the best manufactories at Bermondsey, near London, a place long celebrated for all branches of the leather busines.

By far the greater number of the skins are imported: if lambs, they are thus prepared; the skins are first soaked for a time in water, to cleanse them from any loose dirt and blood, and put upon the beam commonly used for the purpose, which is a half cylinder of wood covered with strong leather, and scraped on the flesh-side with the semicircular blunt knife with two handles, used in this operation. They are then hung up in considerable numbers in a small close room heated by flues, where they remain to putrefy for a given time. During this process a thick, dirty slime works up to the surface of the skin, by which the regularity of the process is judged; and the wool is loosened, so that it readily comes off with a slight pull. Each skin is then returned to the beam, the wool taken off and preferred, and all the slime worked off with the knife, and the rough edges pared away. The skin is then put into a pit filled with lime-water, and kept there from two to six weeks, according to the nature of the skin, which has the effect of checking the further putrefaction, and produces a very remarkable hardening and thickening of its substance, and probably also it detaches a further portion of the slime. The skin is again well worked upon the beam, and much of its substance pared down, and all inequalities smoothed with the knife. Much pains and judgment are required in these operations, on one hand not to endanger the substance of the skin by the putrefaction (which if carried on too long would soon reduce it to an incohesive pulp), and on the other hand to work out every particle of the slime, of which the leaf, if retained, will prevent the skin from drefling well in the subsequent processes, and from taking the dye uni-

formly and well. The skin is then again softened and freed from the lime by being thrown into a vat of bran and water, and kept there for some weeks in a state of gentle fermentation, being occasionally returned to the beam. All the thickening produced by the lime is thus removed, and the skin is now highly purified, and is a thin extensible white membrane, called in this state a pelt, and is fit for any subsequent operation of tawing or dyeing, or oil dressing, or shomoying.

The method of bringing kid and goat's skins to the state of pelt is nearly the same as for lambs, except that the liming is used before the hair is taken off, the hair being of but little importance, and only to the plaiters; but the lamb's wool, which is more valuable, would be injured by the lime. Kids' skins will take a longer time in tanning than lambs.'

If the pelt excepted, they are put into a solution of alum and salt in warm water, in the proportion of three pounds of alum and four pounds of salt to every 120 middle-sized skins, and worked about therein till they have absorbed a sufficient quantity. This again gives the skin a remarkable degree of thickness and toughness.

The skins are then taken out and washed in water, and then again put into a vat of bran and water and allowed to ferment for a time, till much of the alum and salt are got out, and the unusual thickening produced by it is for the most part reduced. They are then taken to a lofty room with a flue in the middle, and stretched on hooks and kept there till fully dried. The skins are then converted into a tough, flexible, and quite white leather; but to give them a glossy finish, and to take off the harshness of feel till remaining, they are again soaked in water to extract more of the salt, and put into a large pail containing the yolks of eggs beat up with water. Here the skins are trodden for a long time, by which they go completely imbibed the substance of the eggs, that the liquor above them is rendered almost perfectly limpid, after which they are hung up in a loft to dry, and finished by glowing with a warm iron. There are other smaller manipulations, which need not be here mentioned.

The essential difference therefore between tanning and tawing is, that in the former case the pelt is combined with tan and other vegetable matter, and in the latter with something that it imbibes from the alum and salt (possibly alum), and which is never again extracted by the subsequent washing and brauning.

The morocco leather prepared chiefly from sheep's skins and used for coach-linings, the best kind of book-binding, &c. is prepared by the following process. The skin, cleaned and worked in the way already described, is taken from the lime-water, and the thickening thereby occasioned is brought down, not by bran liquor as in tawing, but by a bath of dogs' or pigeons' dung diffused in water, where it remains till sufficiently supplied, and till the lime is quite got out, and it becomes a perfectly white clean pelt. If intended to be dyed red, it is then fewed up very tight in the form of a sack, with the grain side outwards (the dye only being required on this side), and is immered in a cochinial bath of a warmth just equal to what the hand can support, and is worked about for a sufficient time till it is uniformly dyed, a process that demands much skill and experience. The sack is then put into a large vat containing sumach infused in warm water, and kept for some hours till it is sufficiently tanned.

The skins intended to be blacked are merely sumached without any previous dyeing. After some further preparation, the colour of the fine red skins being finished with a weak
weak bath of saffron, the skins when dry are grained and polished in the following way. They are stretched very tight upon a smooth inclined board, and rubbed over with a little oil to supple them. Those intended for black leather are previously rubbed over with an iron liquor, by means of a stiff brush, which unites with the gallic acid of the liquor, instantly strikes a deep and uniform black. They are then rubbed by hand with a ball of glass cut into a polygonal surface, with much manual labour, which polishes them and makes them very firm and compact. Lastly, the graining or ribbed surface by which this kind of leather is distinguished, is given by rubbing the leather very strongly with a ball of box-wood, round the centre of which a number of small equi-distant parallel grooves are cut, forming an equal number of narrow ridges, the friction of which gives the leather the desired inequality of surface.

The proceeds for the real morocco leather, as prepared from goat-skins at Fez and Tetuan, is thus described by M. Broussonet. The skins are first cleaned, the hair taken off, limed and reduced with bran, nearly in the way already described for the English morocco leather. After coming from the bran they are thrown into a second bath made of white figs, mixed with water, which is thereby rendered slimy and fermentable. In this bath the skins remain four or five days, when they are thoroughly salted with sal-gem (or rock-salt) alone (and not with salt and alum), after which they are fit to receive the dye, which for the red is cochineal and alum, and for the yellow, pomegranate bark and alum. The skins are then tanned, dressed, suppled with a little oil, and dried.

Much excellent leather of every kind is prepared in different parts of the Russian empire. The preparation of the fine Russian leather, so well known for its quality and for its peculiar smell, is described in large in Mr. Tooke's "View of the Russian Empire," to which we must refer the reader for the minuter particulars. In general it may be stated that the hides are first put into a weak alkaline ley to loosen the hair, and then scraped on a beam, then (if calves) are reduced by dogs' dung, and a four oatmeal drench, then tanned with great care and frequent banding. The bark used here is feldom oak, but, where it can be got, the bark of the black willow, or if this cannot be had, birch-bark. They are then dyed either red or black, these being the two colours the most esteemed. For the red, the hide is first soaked in alum, and then dyed with Brazil wood. The black is given as usual with an iron liquor. The leather is then aired with birch-tar, which gives the peculiar smell so much prized (and which, when used for book-binding, has the valuable property of protecting the book from worms), and is finished by various other manipulations. The trenched or barred surface is given to the leather by a very heavy steel cylinder wound round with wires. See Vults.

A valuable saffian or dyed maroon leather, almost equal to that of Turkey, is prepared largely at Aitracah and other parts of Asiatic Russia. Only bucks' and goats' skins are used for this purpose. The favourite colours are red and yellow. The general method of preparing the pelts is the same as in this country for the dyed morocco leather, that is by lime, dogs' dung, and bran. Honey is also used after the branning. The honey is dissolved in warm water, and some of this liquor is poured on each skin spread out on wooden trays till it has imbied the whole of the honey, after which it is let to ferment for about three days, and then salted in a strong brine and hung up to dry. The skin is then ready to receive the dye, which for red is made with cochineal and the falsola erioides, an alkaline plant growing plentifully on the Tartarian salt deserts, and the colour is finished with alum. When dyed, the skins are tanned with sumach. To the very finest reds, a quantity of tannin is used with the cochinal bath, and the subsequent tanning is given with galls instead of sumach, which renders the colour as durable as the leather itself. The roughness always observed on the surface of the skin, is given by a heavy kind of iron rake with blunt points. The yellow saffians are dyed with the berries of a species of rhambus (the Avignon berry would answer the same purpose, and is used in other countries), or with the flowers of the wild camomile. For other kinds of leather, see Shagreen and Shamos.

Turkey-Pod, in Agriculture, a troublesome weed in dry sandy pastures, but which is only an annual.

Turkey-Stone. See Oil-Stone.

Turkey-Wheat. See Maize and Zea.

Turki, in Geography, a town of Hindoostan, in Basar; 31 miles W.N.W. of Durbangah. N. lat. 26° 18'. E. long. 86° 33'.—Also, a town of Grand Bucharia; 30 miles N. of Termid.

Turkina, a town of Russia, in the government of Caucasus, on the Caphian sea; 140 miles S. of Affrachan. N. lat. 44° 15'. E. long. 42° 14'.

Turkish Coins, Measures, and Trees, see the Sublacis, and Turkey.

Turkomans, Turcomans, or Turkmans, in Geography, a denomination distinguishing some of the Tartar hordes, who, on the great revolutions of the empire of the caliph, emigrated from the eastward of the Caphian sea, and spread themselves over the vast plains of Armenia and Asia Minor. After having been introduced into the Arabian empire, they proceeded to give law to those who called them in, either as mercenaries or allies. This was signally experienced by the caliphs themselves. In 934, Motaizam, brother and successor of Almam, having taken a body of Turkmans for his guards, was compelled to quit Bagdad on account of their disorder, and, after his time, their power and influence increased to such a degree, that they became the dispensers of the throne and life of their princes, and murdered three of them in less than thirty years. The caliphs, when freed from this bondage, did not profit by their experience; for about the year 935, Radi Begalah, having again renounced his authority to a Turkman, his succedors were entangled in their former chains, and guarded by the Emis-el-0mara, possessed only the shadow of power. Amidst the disorders of this anarchy, a multitude of Turkman hordes penetrated into the empire, and founded different independent states, in the Kerman and the Khorasan; at Iconium, Aleppo, Damascus, and in Egypt. Until this time the Turks, called "Ogouzians," had remained to the E. of the Caphian and toward the Dijboun; but, about the beginning of the 13th century, Chengis Khan, having united all the tribes of Upper Tartary against the princes of Balk and Samarcand, the Ogouzians did not think proper to wait for the Moguls, but marched under their chief Soliman, and driving their herds before them, encamped (in 1214) in the Azerbeidjan, to the number of 50,000 herdmen. The Moguls followed them, and pushed them still farther to the west, into Armenia. Soliman, bearing a gold chain, ordered, on his own authority, the cememn (in 1220) in endeavouring to pass the Euphrates on horseback, Ergotruj, his son, took the command of the hordes, and advanced into the plains of Asia Minor, where he was relieved by the abundant pasture which they afforded for his cattle. The good conduct of this chief procured him in these countries, a power and respect which made his alliance sought after by other princes. Among
Among these was the Turkman Ala-el-din, sultan of Iconium. Ala-el-din, advanced in life and harried by the Tartars of Genghis Khan, granted lands to the Turks under Ertogrul, and even made their chief general of all his troops. Ertogrul proved himself deserving the confidence of the sultan, vanquished the Moguls, acquired still greater power and reputation, and transmitted his honours to his son Olman, who received from Ala-el-din, successor of the former of that name, the Kofetan, drum, and horse-tails, which are symbols of command among all the Tartars. This Olman, to distinguish the Turks, his followers, from the others, gave them the name of "Olmanes," from which we have made Ottomans; which new name soon became formidable to the Greeks of Constaninople, from whom Olman conquered a sufficient extent of territory to found a powerful kingdom. He soon bellowed on it that title, by assuming, in 1350, the dignity of sultan, which signifies absolute sovereign.

No one is ignorant in what manner his successors, the heirs of his ambition and activity, continued to aggrandize themselves at the expense of the Greeks; till, continually depriving them of whole provinces in Europe and Asia, they at length fitted them up within the walls of Constaninople; and Mahomet II. son of Amurath, having taken that city in 1453, annihilated this branch of the Roman empire. The Turks, now finding themselves disengaged from the affairs of Europe, turned their ambitious arms against the southern provinces. Bagdad, subjugated by the Tartars, had been without caliphs for two hundred years, but a new power, established in Perlia, had succeeded to a part of their domains; and another, formed in Egypt, so early as the tenth century, and subduing, at that time, under the name of Mamlouks, had feized on Syria.

The Turks determined to despise those two rivals. Bayazid, the son of Mahomet, executed a part of this plan, by taking Armenia from the Son of Perlia, and Selim his son completed it, by the conquest of the Mamlouks. This sultan having drawn them near to Aleppo, in 1517, under pretext of defiring their allegiance in the war with Perlia, suddenly turned his arms against them, and took from them successively Syria and Egypt, whither he pursued them. From that time the Turks established themselves in that country; but they are not settled much among the villages. We rarely meet with any individuals of that nation, except at Cairo; there they exercise the arts, and occupy the religious and military employments. Formerly they also were advanced to posts under government, but, within the last thirty years, a tacit revolution has taken place, which, without taking from them the title, has deprived them of the reality of power. See Turk and Turkey.

Volney observes, that the language of the Turkmans is the same with that of the Turks, and their mode of life nearly similar to that of the Bedouin Arabs. Like them, they are pious, and consequently obliged to travel over immense tracts of land to procure subsistence for their numerous herds. But there is this difference, that the countries frequented by the Turkmans being rich in pastureage, they can feed more cattle on them, and are therefore less differing than the Arabs of the desert. Each of their "ords" (hence borda), or camps, acknowledges a chief, whose power is not determined by fixed laws, but governed by custom and circumstances. It is rarely abused, because the society is compact, and the nature of their situation maintains sufficient equality among its members. Everyone able to bear arms is anxious to carry them, since on his individual force depend both his personal safety, and the respect paid him by his companions. All their property consists in cattle, that is camels, buffaloes, goats, and especially sheep. They live on milk, butter, and meat, which are in great abundance among them, and the surplus of which they sell in the towns and the neighbouring country, for they are almost able alone to supply the butcheries. In return, they take arms, clothes, money, and corn. Their women spin wool, and make carpets, the use of which is immemorial in these countries, and consequently indicates their manner of living to have been always the same. As for the men, their whole occupation consists in smoking, and looking after their flocks. Perpetually on horseback, with their lances on their shoulders, their crooked fabrics by their sides, and their pillows in their belts, they are expert horsemen and indefatigable folders. They have frequent differences with the Turks, who dread them; but as they are divided among themselves, and form separate camps, they do not assume that superiority which their combined forces would ensure them. The pachalics of Aleppo and Damascus, which are the only parts of Syria they frequent, may be computed to contain about 30,000 wandering Turkmans. A great number of these tribes pass, in summer, into Armenia and Caramania, where they find grass in greater abundance, and return to their former quarters in the winter. The Turkmans are reputed Muffulmen, and generally bear the distinguishing mark, circumcision. But they trouble themselves very little about religion, and they have neither the ceremonies, nor the fanaticism of sedentary nations. As for their manners, to describe them accurately, it would be necessary to have lived among them. They have, however, the reputation of not being robbers, like the Arabs, though they are neither less generous, nor less hospitable than they; and when we consider that they live in plenty, without being rich, and are inclined to war, and hardened by fatigue and danger, we may presume they are equally removed from the ignorance and servility of the peasants, and the corruption and selfishness of the inhabitants of the towns. See Truchimianes.

Turlach-More, i.e. the Great Turlach, in the county of Galway, Ireland, a kind of lake, formed by the expansion of the rivers Clare and Moyne, which is upwards of six miles in length, and two in breadth; but which in summer, from the water being carried off by subterraneous passages, becomes a beautiful and found sheep-walk.

Turlach, a town of Hindoostan, in the circuit of Ciscolle; 25 miles E. of Kimedy.

Turlah, a town of Hindoostan, in the circuit of Ciscolle; 25 miles E. of Kimedy.

Turlos, a small island in the gulf of Engia, near the N.E. point of the island of Engia.

Turlupnade, a term used chiefly among the French for a low leaf or witticism. The occasion of the name is said to be derived from a famous comedian at Paris, called Turlupin; whose talent confided chiefly in raising a laugh by miserable puns and quibbles.

Turlupins, Turlupini, a denomination given to the brethren of the free spirit; whole external aspect and manners carried a very shocking air of lunacy and distraction.

They called their sect the fraternity of the poor, and spread themselves over England and France. They are said by some to have had their name turlupines, quod ea tantum habenter loca, que lupis expedita erant.

They attempted to settle themselves at Paris in 1372, but were a great part of them burnt, with their books; as is related by Gaguin and Du Tillet, in the life of Charles V.

Turmeric, Curcuma, in the Materia Medica, a medicin-
nal root, being the root of the Curcuma longa of Linnaeus, used likewise by the dyers, to give a yellow colour.

It is externally greyish, and internally of a deep lively yellow or saffron colour, very hard, and not unlike, either in figure or fize, to ginger.

It is brought chiefly from the East Indies, but it is common in the gardens of the Chinese, who use it as a mordant, and grows abundantly in Malacca, Java, and Batica. In England it was first cultivated by Mr. P. Miller in 1759. It has been long officially known. That should be choen which is big, new, refined, hard to break, and heavy.

Some people have mistaken it for Indian saffron, and their error was owing to this, that the yellow root, as it grows old, turns brown; and when pulverized, is reddish. It is much used by the grovers, &c. to dye their gloves. The Indians use it to dye their rice, and other foods, of a yellow colour: whence some call it Indian saffron.

Our dyers do not find that it gives so readily a yellow as the luteoia, or weld; nor can any of the mordants give it a sufficient degree of durability; common salt and ammoniacal muriate fix its colour fast, at the same time rendering it deeper; but it is admirable to brighten and heighten the red colours dyed with cochineal and vermillion; as scarlets, &c.

Turmeric has a slight aromatic, and not very agreeable smell; and a bitterish, slightly acid, and somewhat warm taste. It readily gives out its active matter, both to aqueous and spirituous menstrua; communicating to the former its own deep yellow, and to the latter a fine yellowish-red tincture. Diluted with water, it yields a small quantity of a gold-coloured essential oil, of a moderately strong smell, and pungent taste: the remaining decoction, infipid, leaves a bitterish, considerably saline taste. The infipid extract from rectified spirit is moderately warm and bitter, and not a little nauseous. In the Eastern countries, this root, besides its use in colouring and seasoning their food, is much recommended as a medicine; being accounted one of the most effectual remedies in obstructions of the visera and mfenfery, which are there frequent; in uterine disorders, difficulties of urine, and affections of the kidneys. Among us it has also been employed by way of decoction, infusion, and powder, as a debulgruent, in hypochondria, leuko-plagmatic, and cachectical constitutions; and esteem'd by some as a specific in the jaundice: the dose in infusibn is from a scruple to a drachm; in decoction or infusion twice as much. It tinges the urine of a deep yellow colour. Lewis.

Although the ufe of this root has been highly commended, it is now very rarely employed. A platter of turmeric, well bruised, top and roots, is thought to be good against the bite of the rattle-snake. See Phil. Trans. No. 479. p. 144.

Turmeric-Wash, is the gum of the turmeric-root dissolved in water.

The qualities and uses of it are much the same as those of the yellow-berry wash for water-painting; but it is a brighter and cooler yellow; for which purpose it should be dissolved in spirit of wine instead of water, by putting two ounces of proof-spirit, and one ounce of water, in a phial, with two drachms of powdered turmeric-root, shaking them well together, and letting them stand, with a repetition of the shaking, for three or four days.

TURMERO, in Geography, a town of South America, in the government of Caraccas; 40 miles S.W. of Leon de Caraccas.

TURN, a town of Wallachia, at the confluence of the Alaut and the Danube; 24 miles S. of Brancovani.

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TURN is used for a circular motion; in which sense it coincides with revolution.

TURN, in a Clock or Watch-work, particularly denotes the revolution of a wheel or pinion.

In calculation, the number of turns which the pinion hath is obtained by common arithmetic; thus 5\frac{60}{12}, where the pinion 5, playing in a wheel of 60, moves round 12 times in one turn of the wheel. Now, by knowing the number of turns which any pinion hath in one turn of the wheel it works in, you may also find how many turns a wheel or pinion has at a greater distance; as the contrate-wheel, crown-wheel, &c. by multiplying together the quotients, and the number produced is the number of turns, as \(5\frac{55}{11}\) in this example:

The first of these three numbers has 11 turns, the next 9, and the last 8. If you multiply 11 by 9, that is, in one turn of the wheel 55, there are 99 turns of the second pinion 5, or the wheel 40, which runs concentrical or on the same arbor with the second pinion 5; if you multiply 99 by the last quotient 8, it produces 792, which is the number of turns the third pinion 5 hath. See Clock-Work and Pinion.

TURN, in Mining, is a pit funk in some part of a drift. If the mine be deep, there are many of these turns one below another.

TURN-House. When a drift is driven across the country N. and S. to cut a lode, the miners make a right angle from their drift, and work on the lode itself; which, as it is in a contrary direction to their past drift, they call turning-house, in order to work on the course of the lode.

TURN, in the Manoeuvres, is an arm commonly used in directing to change hands. See Change and Enter.

TURN, in the Sea Language. See LAND TURN, TACK, and TURNING.

TURN, or TOURN, is also used for the sheriff's court, kept twice a year in every hundred within his county, viz. a month after Easter, and within a month after Michaelmas.

From this court none are exempted but archbishops, bishops, earls, barons, religious men and women, and all such as have hundreds of their own to be kept.

It is a court of record in all things that pertain to it, and is also the king's feet through all the county, of which the sheriff is judge; this court being incident to his office. The attendance on it is called festa regalis, or fait-royal.

It is called the sheriff's turn, because he takes a turn or circuit for this purpose through the shire, holding the same in several places.

TURN in the Head, in Rural Economy, a disease in calves and young cattle, in which external objects would appear to turn round. The affection in this case seems to arise from some diseased state of the brain, or parts about it.

In the cured, bleeding is advised, in proportion to the size and strength of the animal; after which a powder, composed of camphor, valerian, nitre, and birthwort, in the quantity of a drachm of the first to an ounce of each of the other ingredients, should be well powdered and mixed together, and then given at once in a pint of rosemerry tea, repeating it as occasion may require.

By this means much advantage has been gained, it is said, in some instances of this disease.

TURNADO. See TORNADO.

TURNAGAIN ARMS, in Geography, a branch of the north part of Cook's inlet, extending east from Point Pofleffion.
The term "Turnament," or "Tournament," refers to a form of medieval sport which featured the display of skill in jousting and combat. The first tournaments were held in France, with the Turnament of 1347 under Richard II being renowned. These contests were not just about winning but also about displaying skill and bravely. The arms used in these tournaments included swords, lances, and shields, and the participants were often knights and nobles. The tournaments were often held with the approval of the local authorities and were part of the cultural and social life of the time. They were also opportunities for noblewomen to observe and participate in the activities of their menfolk. The tournaments were not only entertainments but also served as a means of introducing and disseminating new forms of literature and art, as evidenced by the translations and commentaries written about them. The tournaments were a part of the larger body of literature that included works in Latin, such as those by Varro and Cicero, which were translated into vernaculars like French, to reach a wider audience. The tournaments were not only a form of entertainment but also a way to propagate learning and knowledge.

TURNELL ISLAND, in Geography, an island in the bay of Honduras, about 20 miles long, and 10 broad, abundant in cocoa-nut trees, and much frequented by fisher men. N. lat. 17° 16', W. long. 88° 20'.

TURNEP, in Botany, &c. See BRASSICA and TURNIP.

TURNER, WILLIAM, in Biography, one of the fathers of English botany as well as of the English Protestant church, was born at Morpeth in Northumberland, probably about the year 1520. He was educated at Pembroke college, Cambridge, under the patronage of Sir Thomas Wentworth, and about the year 1538 had already distinguished himself for science and learning, being jutified with the little real information he could obtain from those about him. Natural philosophy, medicine, and botany, chiefly engaged his attention at this time, but the great questions involving the vital interests of religious truth and liberty, having been stirred up, he devoted himself also to their examination, and incurred the danger and obloquy incident to men or laws, in every age and country, to the honest prosecution of such enquiries. Turner, like many others in England, at this period, united the characters of a physician and a divine. He became an itinerant preacher, for zealously a character that the infamous bishop Gardiner threw him into prison; from whence he was, after a long time, released, we are not informed by what means, and became a voluntary exile from his native land. He resided on the continent with many other English refugees, principally at Cologne, and Bals, till the death of Henry VIII. During this interval, Turner travelled into Switzerland and Italy, where he contracted a friendship with many distinguished botanists and physicians, especially the great Conrad Gesner of Zurich, and professor Ghini of Bologna, the founder of the phyc-garden, and of the botanical chair, in that university, and the predecessor of Cefalpinus and Anguillara. At Ferrara Turner received the degree of doctor of physic, which was confirmed to him at Oxford, when he returned to England on the accession of Edward VI. He was made physician to the Protector Somerset, and his ecclesiastical merits were still more amply rewarded, by a prebend of York, a canonry of Windsor, and the deanship of Wells. He had deferred this preferment by several publications in defence of Protestantism, which very caule, however, obliged him to fly from the perfecutions of the bloody Mary, during whose reign Dr. Turner remained abroad. The accession of Elizabeth restored him to his liberty and native soil, as well as to all his ecclesiastical benefits. The rest of his life was devoted to his clerical duties, and his botanical amusements; two pursuits which in many honest and good men have gone very lovingly together, to their mutual advantage and honour. He had a botanical garden at Wells, and another at Kew, and appears to have divided his time between his deanship, and his residence in Crotch Friars, London. Dr. Pulteney thinks, from Turner's frequent mention of the plants of Purbeck, and Portland, that he had some intimate connections in Dorsetshire. This worthy man died July 7, 1568, apparently at no very advanced age, leaving several children. His son Peter was educated to physic, travelled, and took degrees abroad; was incorporated doctor at Cambridge, and at Oxford, and died, aged 72, in 1614, but does not seem to have inherited his father's turn for botany.

Turner's earliest botanical work is said to have been printed at Cologne in 1544, in octavo, under the title of Historia de naturis herbarum, schedis et notis valutaria. But this is mentioned by Bumaldus, or rather Ovidius Montanaus, only, in his Bibliotheca Botanica, Seguier's edition, p. 18, without notice of any other publication of our author; nor does it appear to be known to English collectors, any more than the following. "Names of Herbes in Greek, Latin, English, Dutch, and French," printed at London, 1548, in 12mo., by the same writer.

The chief publication of Dr. Turner is his well-known Herbal, in small folio, black letter, with wooden cuts, of which the first part was originally printed at London in 1551, and is now, on account of its rarity, much valued by collectors. The second part appeared at Cologne in 1562, accompanied by a reimpresison of the first. In 1568 the first and second parts were reprinted at the same place, with a new title page, a dedication to Queen Elizabeth, from which many of the above particulars of the author's life are taken, and the addition of a third part of the same work. To the whole are subjoined "A booke of the natures and properties as well of the bathes in England as of other bathes in Germanye and Italye, very necessarye for all sycke perforce that can not be healed without the helpe of natural bathes"; and "A most excellent and perfecte homih apostlcarie or homely phystick booke, for all the greves and dyesales of the bodye, translated out of the Almane speche into English, by Jhon Hollybusch." For this last lament production Turner is, perhaps, not responsible. The Herbal is arranged alphabetically, and is more original and practical, than the more popular and celebrated publications of Lyte, Gerard, or even Parkinson. The object of the author was to determine the plants of the ancients, and to record their reputed virtues. This is accomplished with more caution and discretion than are common to most of his contemporaries, and with very few dogmatical confidences than Fabius Columba subsequently affirmed. The third part, dedicated to the company of surgeons, professes more especially to treat of medical plants not known to the ancients. The author apologizes in these terms for its imperfections. "For surely bying so much vexed with sicknes, and occupied with preaching and the study of divinity and exercise of discipline, I have had but small leasure to write Herballes." This dedication is dated "at Welles 1564." The wooden cuts of all the three parts of Turner's Herbal are taken from those of Fuchsius, and at first sight appear to be the very same blocks as those used in the octavo edition of the latter author, printed at Lyons, in 1595. A careful inspection however will easily detect minute differences; and we especially observe slight damages in Turner's figures, not occurring in this later impression, which decisively prove it to have been printed from more recent cuts. Haller gives us the author credit for having first figured the true Medicago, and the Rhus Cotinus; see part 2d, 52 and 115. Under the former he describes various species of Medicago, distinguishing their different seed-vessels; and of the latter exhibits a sufficiently expressive delineation, with a correct, though brief, history.

Turner ranks more amongst our earliest British zoologists. He published at Cologne, in 1544, an octavo of ten pages, entitled Aevin praecipuorum, quarnus apud Plinium et Aristotelis mentio of, historia. Conrad Gesner, to whose museum he repeatedly contributed, after his settlement in England, speaks of him as eminently deserving of praise in the department of ornithology; and Merret in his Pinax mentions the above little book, as great in authority, though small in bulk. Gesner has prefixed to the third volume of his own ponderous Historia Animalium, a letter of Dr. Turner's, dated Wissenburg, Nov. 1557, in which the various
kinds of Fishes known in England, amounting to more than fifty, are briefly distinguished, with their Latin and English names. At the conclusion of the dedication of his Herbal to the queen he promises a book of the names and natures of fishes that are within her majesty's dominions, if he might have reft and quietness in his old age, and defence from his enemies, "whiche," says he, "have more then these eight yeares continually troubled me very much, and holden me from my booke." He speaks here also of sickness, as an impediment to his labours. His work upon baths is marked with the fame originality of thought, and practical observation, as his botanical and zoological writings. Turner wrote also on the "Wines commonly used in England," and on the "Nature and Virtue of Tuscple." His numerous treatises on controversial divinity, published and unpublished, were chiefly in defence of the Reformation; but his most valuable undertaking of this kind we preface to have been his collation of the translation of the Bible, with Hebrew, Greek, and Latin copies, in consequence of which he found occasion to correct it in many places. How far his corrections were turned to advantage by the translators in James I.'s time, we are not informed.

Dr. Pulteney observes, that "he procured to be printed at Antwerp, a new and corrected edition of the Historia Genii noflrar. f. Anglia, written by William of Newburgh, from a manuscript he found in the library of Wells;" but he complains of the printer, for omitting his preface as well as other communications. Turner translated several works from the Latin, particularly "The Comparison of the old Learning and the new?" written by Urbanus Regius; printed at Southwark in 1537, in 8vo.; and again in 1538 and 1548. We regret having never met with this book, as the subject promises much; and in the hands of Turner, or any man like him, who dared to think for himself; and whose judgment was regulated by prudence and learning, it could not but be valuable and instructive. — Turner's Herbal. Haller's Bibl. Bot. Pulteney's Sketches of the Progress of Botany. Dryand. Bibl. Banks. S.

TURNER, WILLIAM, a fellow student with Purcell and Dr. Tudway, among the second set of chapel-children under Dr. Blow, was sworn in gentleman of the royal chapel in 1669, as a counter-tenor usher, his voice fretting to that pitch; a circumstance which fo seldom happens, naturally, that if it be cultivated, the possessor is sure of employment: and, in consequence of its utility, soon after his reception into the chapel royal, he was appointed vicar-choral in the cathedral of St. Paul's; and a lay-vicar of the collegiate church of St. Peter, Westminister. In 1696, he was admitted to the degree of doctor in music at Cambridge.

Dr. Turner arrived at the great age of eighty-eight, and dying in 1746, was buried in the cloister of Westminister Abbey, in the same grave with his wife; who, being nearly of the same age, died but four days before him, after living together with great harmony of disposition, and felicity, near seventy years.

In many of our cathedral books there is an anthem, "I will alwaye give thanks," which is called the *club-anthem*, on account of its having been composed by three masters in conjunction; but not, as has been said, by Dr. Boyce and others, "as a memorial of the strict friendship that subsisted between them?" for, according to Dr. Tudway, who remembered the transaction, and records it with the anthem in the Mus. Collec. vol. iii. "the anthem was composed by order of Charles II. at a very short notice, on account of a victory at sea over the Dutch, the news of which arrived on Saturday, and the king willing to have the anthem performed the next day, and none of the masters
Flowers sessile on the footstalks. Leaves ovato-lanceolate, acute, coarsely serrated, with two glands at the base. Outer calyx ovato-lanceolate, notched.—Native of the red hills, and other places, in Jamaica; cultivated by Miller, and frequently seen in our flowers, especially the narrow-leaved variety, B, flowering from June to November. The stem is shrubby, but soft, or partly herbaceous, halving a few years only, several feet high, with roundish, wavy, downy branches, leafy at the ends. Leaves ovate, or lanceolate, varying in length from two to three inches, and in breadth from half an inch to above an inch, unequally and bluntly serrated, strongly ribbed and veined, soft and downy on both sides, felifid when bruised. Footstalks half an inch or an inch long, bearing two peltate glands near the top. Flowers large, bright yellow, short-lived, solitary, on the footstalks of several of the upper leaves, close to the leaf itself. Outer calyx of two ovato-lanceolate, strongly notched or serrated, permanent leaves, resembling the proper foliage; inner tubular, silky, yellowish, in five lanceolate, entire, deciduous segments, shorter than the corolla. We can scarcely think there is any specific difference between the broad and the narrow-leaved varieties. Willdenow’s β and γ are precisely the same plant. He, like Linnaeus, erroneously refers Sloane’s synonym to the broad-leaved variety, though Martyn had previously, like Miller, considered it as belonging to our β. His figure, in fact, represents that intermediate form of leaf which most usually occurs.

2. T. subulata. Awl-shaped Turnera.—Flowers sessile on the footstalks. Leaves ovate, acute, coarsely serrated, with two glands at the base. Outer calyx awl-shaped, entire.—Gathered in New Granada by Mutis, whose specific name was very inappropriately referred by Linnaeus to T. ulmifolia. The leaves are ovate, not much above an inch in length, very downy and hairy, like the flalks and branches. Flowers like- width smaller than those of ulmifolia; their petals, in the dried specimen at least, nearly white, with purple radiating spots on the disk. Calyx clothed with dense silky bristles; the leaves of the outer one very narrow, awl-shaped, channelled, and quite entire, affording a decisive specific character. Capsule the size of a pea, clothed with long silky bristles. The peltate glands, on the edge of the leaf itself, are very large and conspicuous in this species.

3. T. obtusifolia. Blunt-leafed Turnera.—Flowers sessile on the footstalks. Leaves obovate, obtuse, coarsely crenate, with two glands at the base. Outer calyx linear-lanceolate, flat, entire.—Native of Brazil. Communicated to the younger Linnaeus by Thouin, probably from Commerson’s collection. This is very clearly distinguishable from the two former by its broad obtuse leaves, fearly an inch and a half long, and one inch in breadth; wedge-shaped at the base; broadly and bluntly crenate. The leaves of the outer calyx are broader, flatter, and rather shorter, than in the leaf, measuring about half an inch. Capsule twice as large as in that species, coriaceous, densely covered with rigid bristles. Seeds club-shaped, beautifully reticulated, with intermediate depressions; their tunic nearly of their own length.

4. T. Pumila. Nettle-leafed Dwarf Turnera. Linn. Sp. Pl. 387. Am. Acad. v. 5. 395. Wild. n. 2. Ait. n. 2. Swartz Obs. 116. (Pumilea n. 1; Browne Jam. 188. Chamomilla urticae folio, folio luteo; Sloane Jam. v. i. 202. t. 127. f. 6.) — Flowers sessile on the footstalks. Leaves lanceolate, deeply serrated, without glands. Outer calyx linear, minute, hairy.—Native of dry sandy fields in Jamaica, flowering late in the year. Swartz. Root annual, fibrous. Stem herbaceous, from one to three inches, or more, in height, simple or branched, erect or decumbent, round, hairy, leafy. Leaves about an inch long, so deeply serrated as to be almost pinnatifid, clothed with long scattered hairs, but destitute of glands at the base. Flowers small, yellow, seldom expanded, solitary, sessile at the base of each upper leaf, on its hairy footstalk. Outer calyx of two small, linear, upright leaves; inner in five linear hairy segments, preflf close to the corolla. Petals convolute, with long orange-coloured claws. Seeds roundish, compressed, corrugated. Swartz. The Linnaeaceae specimen, from Browne, has no flowers, nor is it easy to fay whence Linnaeus took his account of the inflorescence, which, nevertheless, is confirmed by Swartz.

5. T. fideoides. Soda-leaved Turnera. Linn. Mant. 48. Wildl. n. 4.—Flower-flalks axillary. Outer calyx linear. Leaves nearly sessile, obovate-wedge-shaped, sharply serrated, downy and hoary on both sides, without glands.—Gathered in Brazil by Father Panegai, whose specimen was sent by Arduinio to Linnaeus. The stem is shrubby at the base, or four or five inches high, erect, simple, round, leafy, clothed with hoary down, and long, soft, tawny hairs. Leaves rather more than an inch long, covered on both sides with dense, entangled, somewhat hairy, soft, hoary pubescence; strongly and acutely serrated upwards; entire at the base, and tapering down into a very short hairy footstalk. Flowers axillary, nearly sessile, tawny, their flalks and calyx downy, and clothed with long, yellow, shining hairs. The specific character of Linnaeus, pedunculis bifitis, seems to allude to the two linear or awl-shaped leaves of the outer calyx.

6. T. jetoia. Brittle Turnera.—Flower-flalks axillary, partly combined with the footstalk. Outer calyx linear. Leaves obovate-wedge-shaped, deeply serrated or pinnatifid, very hairy on both sides, without glands.—Gathered by Commerson at Monte Video and Buenos Ayres. The fize of the leaf. Stem shrubby at the base, throwing up a few simple, wavy, nearly upright, hairy, leafy branches, from three to five inches high. Leaves more flalked, and much more deeply cut, than in T. fideoides, being sometimes sharply pinnatifid; they are fearly at all hoary or downy, but covered with long, silky, yellow hairs, such as are extremely copious on the branches, flalks, calyx, and capsule. The flowers are faid to be of a tawny red. Their outer calyx is very long and linear. Their flalks, as far as we can judge, are connected, for about half their length, with the adjoining footstalks. This species is certainly near in the leaf, and the segments of its leaves are evidently variable. We cannot, without spoiling our only specimen of T. fideoides, determine whether its flow-flalk be really separate from the footstalk or not. What Linnaeus in the Monitro terms bractae, are what we have all along called, after his own example in the Systena Vegetabilium, an outer calyx; nor is this part perhaps, as professor Swartz fays, entirely wanting in the next species, though we must allow it to be there still more like bractae.

7. T. eifideoides. Betony-leaved Turnera. Linn. Sp. Pl. 387. Wildl. n. 7. Ait. n. 3. Swartz Obs. 117. (Pumilea n. 2; Browne Jam. 189. Helianthemum betonicæ folio, caule bifuto; Plum. Lc. 141. t. 150. f. 1. Chamomilla caule bifuro, folio oblongo angulato filato, folio luteo, pediculo infundato; Sloane Jam. v. i. 202. t. 127. f. 7.)—Flower-flalks axillary, many times longer than the footstalks. Outer calyx obfolete. Leaves linear-oblong, obtuse, with shallow ferrated.—Native of dry barren ground
TURNERA.

ground in Jamaica. Sent by M. Richard, in 1774, to Kew garden, where it flowered in the fove, from June to October. The root is annual, long and simple. Stem one or more, subdivide, erect, from six to twelve inches high, round, leafy, hairy. Leaves on short stalks, spreading, bluntly toothed or serrate, about an inch and half long, clothed on both sides with minute hary hairs; paler beneath. Flowers small, yellow, on long slender hairy stalks, swelling upwards, bent or jointed about the middle, where are sometimes to be seen two feem to be two minute bracteas, hardly to be deemed an outer calyx. The proper calyx is hairy, in five lanceolate acute segments. Capsule somewhat hairy, pale. Seeds buff-coloured, curved, elegantly impressed with numerous rows of minute dots.

8. T. racemosa. Clutter-flowered Turnera. Jacq. Hort. Vind. v. 3. 49. t. 94. Wildl. n. 8. Ait. n. 4.—Flower-stalks in a terminal cluster; the lower ones axillary, many times longer than the footstalks. Outer calyx wanting. Leaves ovate, bluntly serrate, downy. —The native country of this species is not known, but we have little doubt of its West Indian origin. Jacquin received its seeds with the name of T. ciliolata, under which a specimen lies in the Linnean herbarium. M. Thouin sent seeds to Kew in 1789, and we have what seems a garden specimen from him. The root is annual. Herb much larger than T. ciliolata, with a very hairy, slightly branched, flat. Leaves broad-ovate, two or more in length, unequally serrate, clothed with extremely soft, hary, depressed hairs. Footstalks bristle, almost an inch in length. Flowers small, dull or yellow, on very long and slender hairy stalks. Calyx hairy. Capsule slightly hairy, each of its valves splitting into two. Seeds pale, rough with minute points between the depressed dots.—The calyx in this and the last species does not answer well to the idea of the genus, the tube, though present and permanent, being very short, nor are there any traces of the two outer leaves. Perhaps the latter had been omitted in the generic character, which is sufficiently marked without them.

9. T. guianensis. Slender Guiana Turnera. Aubl. Guian. 291. t. 114. Wildl. n. 9.—Flower-stalks in a terminal cluster, smooth. Outer calyx linear, entire, naked. Leaves linear, smooth, slightly serrate, with two glands at the base.—Gathered by Aublet in the marshy meadows of Timoutou in Guiana, flowering in April. Root fibrous, probably annual. Herb slender, smooth, with a rushy, angular, slightly branched, flat, two feet high. Leaves nearly sessile, two inches long, much less distinctly serrate in Aublet's specimens than in his figure. Flowers small, yellow, on short smooth partial stalks, collected, very few together, into a cluster. Outer calyx permanent, glabrous, at the bottom, rather longer than the inner, whose segments are, as in all the species we have hitherto described, deciduous, the permanent base being shorter, like that of T. racemosa. Capsule very smooth, of three undivided valves.

10. T. rupestris. Rock Turnera. Aubl. Guian. 289. t. 113. f. 1. Wildl. n. 3.—Flower-stalks axillary, very short. Outer calyx linear-lanceolate, toothed, somewhat bristly. Leaves nearly linear, toothed, very smooth, almost sessile. —Found by Aublet, in the moity mossy clefts of rocks about the great water-falls of Sinemari in Guiana, flowering in November. A rigid, slender, branched shrub, about a yard high, whose flowers are more or less covered with Jasminum. Leaves crowded about the ends of the branches, nearly sessile, an inch and a half long, very narrow, tapering at each end, slightly revolute, furnished with disfigured teeth, and by no means serrate, as in Aublet's plate, from which Willowen took his specific definition. Flowers small, yellow, nearly sessile, solitary in the bosoms of the two or three of the uppermost leaves. Outer calyx toothed, or rather serrate, longer than the inner, whose segments are lanceolate and entire; both are slightly clothed with close, silky, white hairs. Petals oblong, jugged at the end.

11. T. fruticans. Shrubby River Turnera. Aubl. Guian. 290. t. 113. f. 2. Wildl. n. 5.—Flower-stalks axillary, very short. Outer calyx linear-lanceolate, toothed, somewhat bristly. Leaves lanceolate, serrate, very smooth, alomost sessile. —Observed by Aublet, on the rocky banks of the Sinemari river, above the great fall, flowering in December. The natives call this shrub, as well as the former, Nupogonea. The present appears to us a variety of the last, differing only in its more luxuriant growth, being seven or eight feet high, with larger and more dilated leaves, whose length is two or three inches, their breadth above half an inch, their veins far more numerous, and their margins rather serrate than toothed. These differences may arise from a more favourable situation, or more fertile soil. In the flowers or inflorescence there seems no difference whatever.

12. T. rugosa. Wrinkled Turnera. Wildl. n. 6. (Piri- queta villosa; Aubl. Guian. 298. t. 117. Burcardia; Schreb. Gen. 206, adopted from Scopoli; expunged at p. 827, and referred to Turnera.)—Flower-stalks axillary, many times longer than the footstalks. Outer calyx wanting. Leaves ovate, unequally crenate, wrinkled, downy. Styles five.—Native of the sandy sea-flows of Cayenne and Guiana, flowering and bearing seed almost all the year round. The root is annual. Stem erect, about two feet high, branched, leafy, villous. Leaves on short stalks, bluntest, two or three inches long, rather elliptical, veiny, rugose, clothed with reddish hairs. Flowers small, yellow, on long, slender, hairy stalks. Capsule very like that of T. racemosa, n. 8, which this species so nearly resembles in many respects, that, were it not for the five styles, and the more crenate and rugged leaves, we should be disposed to unite them. We place this at the end, for future examination, not having seen a specimen to determine the question.

Turnera, in Gardening, comprises a plant of the woody, flowering, exotic kind, for the flower, the species of which cultivated is the elm-leaved Turnera (T. ulmifolia), which has a shrubby stem, rising eight or ten feet in height, and a bright yellow flower. It is found in the West Indies.

There is a variety with narrow leaves, which also rives with a shrubby stalk to the height of eight or ten feet, with branches less slender and stiff than in the broad-leaved form: the leaves narrow-lanceolate, hairy, near three inches long, and about three quarters of an inch broad, terminating in acute points, obtusely serrate on their edges, and flaring upon very short footstalks; when rubbed they emit a disagreeable odour: the flowers are of a pale yellow: the petals large and oval, with the tails or claws twisted, and joining: they are not so large or half so bright a yellow as in the true elm-leaved form. This is a native of Jamaica.

Culture.—Both these plants are easily raised from seed, which should be sown in the spring, in pots, and plunged in the bark-bed, or any other hot-bed, under glass; and when the plants are come up two or three inches in height, they should be planted separately in small pots, plunging them in the bark-bed of the flower, to forward them a little in growth: they may afterwards be placed in any part of the flower, and be managed as other flower exotic plants. They are also capable of being increased by cuttings, planted in pots, and forwarded in the above manner.

They afford a good variety among flower-plants, but they are seldom of long duration, as they mostly go off in the course
course of two or three years, being therefore rather of a biennial nature.

TURNOSE, or Turnsole, in Botany. See Heliotropium, and Crotum Tinctorium.

Some have translated turnsole by the English word sunflower, which has led many to suppose that the great yellow sun-flower, which we keep in gardens, was the plant that afforded the turnsole colour: but this is a mistake; and it is to be observed, that the true turnsole plant, or heliotropium tricocorum, is very common in the fields of France, especially about Montpellier, and in Germany, but does not grow wild with us in England.

The juice of the berries of the turnsole, rubbed upon paper or cloth, at first appears of a fresh lovely green, but presently changes into a kind of bluish purple. It is said that the common blue paper receives its colour from this juice. The same colour, afterwards wet in water, and wrung out, will turn the water into a clear colour; and it is to be observed, that the rags of cloth tinctured by this juice, and turned red by acids, are usually called turnsole in the druggists' shops, and employed for colouring wines and other liquors. M. Nifole, of the French Academy of Sciences, says, that the colouring juice is obtained, not from the berries, but from the tops of the plant, gathered in August, ground in mills, and then comminuted to the prefs. The juice is exposed to the fun about an hour; the rags dip in it, dried in the fun moistened by the vapoour which arises during the flowering of quicklime with urine, then dried again in the fun, and dipt again in the juice. The Dutch and others are faiid to prepare these rags and turnsole in the mafs from other ingredients, of which archil is a principal one. Boyle's Works abr. vol. ii. p. 19.

Neumann's Chem. by Lewis, p. 433.

The Dutch process for making the blue called turnsole is as follows: Lichen, archil, or in cafe this last cannot be obtained, the greater moss of the oak, is dried, cleaned, and pulverized in a mill, refembling the oil-mill, and then fifted through a brafs wire fieve, the interlaces of which do not exceed one millimetre in width (\(\pi\text{m}\) of an inch). The fifted powder is then thrown into a trough, and mixed with an alkali called vedas, which is nothing else but the cendres gravelces in powder. The proportion is one part by weight of the alkali, to two parts of the pulverized vegetable. This mixture is moistened with a small quantity of human urine; the urine of other animals does not contain a sufficient quantity of ammoniac. The mixture ferments, and is kept moist by successive additions of urine. As soon as the materials have become red, they are transferred into another trough, where they are again moistened with urine, and flurred to renew the fermentation. Some days afterwards, the paife acquires a blue colour, in which state it is carefully mixed with one-third of excellcnt potatoes well powderd; and with this new mixture certain trays are fifted, which are one metre (39\(\frac{1}{2}\) inches) deep, and eight decimetres (31\(\frac{1}{2}\) inches) wide. When the fennentation which takes place for the third time has given the paife a considerably deep blue colour, chalk or powdered marble is added, and the whole is well and perfectly mixed. This last addition is made, not to improve the quality of the blue, but to add weight. It is merely an affair of profit. The blue thus prepared is put into iron moulds 32 centimetres long and 22 square at the end (14 inch by \(\pi\text{ths}\) of an inch). The moulded pieces are then placed upon deal planks, in well-aired lofts, to dry; after which they are packed in cases for sale.

The Hollanders made a fecret of this process: and in order to mislead, they have published, that the blue was made with rags coloured by the plant turnsole; whence it has obtained its appellation. The English writers have used this denomination: but the dry-fellers, or dealers in drugs, dilligently these paftills by the name of litmus. We may derive much profit by carrying this discovery into practice.

The principal use of this plant is in dyeing: in order to which, the juice is infipidized and prepared with calx and urine, into blue cakes; which are used also with flarch, instead of flalt.

The lievium of this plant in lime-water and urine, or in the volatile spirit of wine, turns marble blue. See Colouring of Marble.

TURNESS, in Geography, a cape on the east coast of the island of Hoy. N. lat. 58° 41'. W. long. 3° 10'.

TURNETUM, in our old Law Books, a duty paid to the sheriff for holding his turn, or county-court.

TURNHOUT, in Geography, a town of France, in the department of the Two Nethes, built in the year 1212, by Henry IV. duke of Brabant. In the year 1455, the emperor Charles V. gave it to his sister Mary, queen of Hungary, to enjoy during her life. In the year 1648, after the peace of Munster, Philip IV. gave it to princes Amelia, widow of Frederick Henry of Nassau, from whom it came to the house of Orange. The quarter of Turnhout comprehends fifteen villages; 25 miles S.S.W. of Bois-le-Duc.

TURING, in the Mechanical Arts, is the operation of shaping wood, metal, or other hard substances, into a round or oval figure, by the aid of a machine called a lathe; which see.

In turning, the work or substance to be operated upon is placed in the lathe, and made to revolve with a circular motion about a fixed right line as an axis of motion; and the exterior surface is worked to its intended figure by means of some kind of edged tool, which is presented to it and held fast down upon a fixed reft. The protuberant parts of the work, by its rotatory motion, are carried against the cutting edge, and cut off, so as to reduce every part of the outside surface, to an equal distance from the axis of motion, and of course it will be of a circular figure.

The articles which admit of being turned to give them their figure, are all such as combine the three following properties: 1. That they may be suppo'ded to have an ima-ginary right line or axis passing centrically through the whole length of the piece; 2. That all the sections which can be made by planes perpendicular to such axis shall be circular; and 3. That the centre of all such circles shall coincide with the axis or centre line.

It should be observed, that a piece of work may have two or more centre lines in different parts or in different directions; but it must in that case be formed or turned at two or more successive operations, because what can be done at once fixing in the lathe, must come within the above definition.

The work may be turned hollow, so as to make a cavity within: or work may be turned on the outside, to give form to the external surface; and frequently work is turned both without and within; but in either case, the above definitions will apply.

Diodorus Siculus says, the inventor of the art of turning was a nephew of Daedalus, named Talus; and that the reputation which he acquired by this invention excited the jealousy of Daedalus, and induced him to put Talus secretly to death. Pliny ascribes it to Theodore of Samos, and mentions one Thericles, who rendered himself very famous by his dexterity in managing the lathe. With this instrum,
ment, it is said, the ancients turned all sorts and kinds of vases, many of which they enriched with figures and ornaments in baffle relief. Thus Virgil says:

"Lenta quibus torno facili superaddita vitis."

The Greek and Latin authors make frequent mention of the lathe, and Cicero calls the workmen who used it, *vulcani*. It was a proverb among the ancients, to say a thing was formed in the lathe, to express its delicacy and justness.

The art of turning is of considerable importance, as it contributes essentially to the perfection of many other arts. The architect uses it for many ornaments, both within and without highly finished houses. The mathematician, the astronomer, and the natural philosopher, have recourse to it, not only to embellish their instruments, but also to give them the necessary dimensions and precision; in short, it is an art absolutely necessary to the mechanist, the goldsmith, the watchmaker, the joiner, the smith, and others.

As the operation of turning is to be performed by the aid of the lathe, the structure of that machine is the first thing to be considered. In our article Lathe, we have given a description of the most perfect kind of lathe, made in iron, with a triangular bar; and in the article Ross-Engine, we have described a curious lathe for ornamental turning; but it is to be observed, that a much more simple machine will answer all the common purposes of turning.

The essential properties of a lathe for outside work are, first, that it shall have two points which will firmly sustain the work at each end, by penetrating into the ends of the work, and, at the same time, allow it to turn freely round upon the points: there must be a reft or support to hold the tool upon, and also some means of turning the work round upon the points. A lathe to turn hollow or *infinite* work will not admit of a point of support at each end of the piece, and therefore the work is firmly fixed to the extremity of a spindle, which is called a *mandrel*; when the mandrel is turned round, the work revolves with it, and the tool can be applied at the end of the work, to excavate or turn it hollow within, or to turn it on the outside, as required.

Lathes are made in a great variety of forms, and put in motion by different means: they are called *centre lathes*, where the work is supported at both ends; and *mandrel*, *spindle*, or *chuck lathes*, when the work is fixed at the projecting extremity of a spindle.

From the different methods of putting them in motion, they are called *pole lathes*, and *band-wheel lathes*, or *foot-wheel lathes*. For very powerful works, lathes are turned by horses, steam-engines, or water-wheels.

The lathes used by wood-turners are generally made of wood, in a simple form, and are called *bed lathes*; the fame kind will serve for the common turning of iron or steel, but the best work in metal is always done in iron lathes, which are sometimes made with a triangular bar, and are called *bar lathes*. (Such an one is described in the article Lathe; small ones, for the use of watch-makers, are called *turn-benches*, and *turns*; but there is, in fact, no proper distinction between these and the centre lathes, except in regard to size, and that they are made of iron and brass instead of wood.

The *centre lathe* is the most simple of all others. Two beams of wood are fixed horizontally upon legs, like a bench, and form what is called the bed. The two beams are fixed together, parallel to each other, and at a small distance affunder, so as to leave a space or narrow groove between them, nearly the whole length of the bed. This groove is to receive the tenons at the lower ends of the *puppets*, which are short posts rising perpendicularly from the bed, and firmly fixed thereto by means of crofs wedges, put through the tenons beneath the bed; for the tenons are of sufficient length to descend quite through the groove in the bed, and project beneath sufficiently to receive the crofs wedges, which being driven in, draw the bases of the puppets or posts to firmly down upon the surface of the bed, that they will stand firmly erect upon it; or by withdrawing the wedges, the puppets become loose, and can be fixed in another part of the bed, in order that the distance between the two puppets may be made to correspond with the length of the piece of work to be turned. One of the puppets has a pin or *pikes* of iron fixed into it, and the other has at the same level the centre *screw*, working through a nut fastened in the puppet: both the screw and pike have sharp points made of steel, hardened and tempered, that they may not wear away. They must be exactly opposite, and in a line with each other. The piece of work, supposing for instance it is a roller of wood, is supported by its ends between the points of the pike and the screw, that it may turn round freely. The *reel* for the support of the tool is a rail or bar, extending from one puppet to the other; it lies in hooks, projecting from the faces of the puppets.

The work is put in motion by means of the *treadle*, which is worked by the turner's foot; a *screw* or *catgut* is fastened to the treadle, and passing two or three turns round the work, it is fastened to the end of an *elastic pole*, fixed to the ceiling over the turner's head.

The workman stands before his lathe, having one of his feet on the treadle to give it motion; he places a sharp *gouge* or *chisel* on the reel, and approaches the edge of it gently to the piece of work; then pressing the treadle down by his foot, the screw turns the work round, and the chisel or gouge being held firm upon the reel, and so to touch the wood, it will cut it to a circular form. When he has brought the treadle to the ground, he releases the weight of his foot, and the elasticity of the pole draws up the treadle, turning the work back again; during which retrograde motion, he withdraws the chisel from the work, as it would not cut in this direction, though it might impede the motion of the wood, and would injure the edge of the tool. He must perform his work gradually, without leaving ridges; and when he meets with a knot in the wood, he must go on still more gently, otherwise he would be in danger both of splitting his work and breaking the edge of his tool. For turning light work, a bow, itch as is used for shooting arrows, is suspended by its middle over the lathe; the *firing* is then tied to the middle of the bow-firing, in lieu of the pole, and acts in the same manner.

The common centre lathe is a very imperfect machine, when worked in this manner; yet its simplicity is a great recommendation, especially among country workmen, who use it to make various sorts of common articles of household furniture in soft wood, as stool and table legs, *flair-cafe rails*, &c.

In centre lathes, the work is sometimes put in motion by means of a large wheel, turned by one or two more labourers; the wheel should be heavy, that its momentum may be sufficient to overcome any moderate obstacle in the work; and the frame in which it is mounted must be of sufficient weight to stand steady, and not be liable to move, by the exertions of the man turning it. An endless line is used, to communicate the motion of the wheel to the work; it passes round a groove in the circumference of the wheel, and after crossing, like a figure of 8, goes round a small pulley, fixed upon the work. By this means, when the great wheel is turned, it gives a rapid rotatory motion to the matter to be turned, and with a much greater power than can be obtained from the treadle, with the additional advantage of the work turning always
the same way round, so that the turner has no need to take
his tool off the work.

The centre lathe will turn any kind of work which will
admit of being supported at both ends; and it is used by
millwrights and iron-founders, for turning mill-shafts, axles, rollers,
and other iron-work. For such purposes, the lathe must be made exceedingly strong, and with nuts and
screws to fasten the puppets down upon the bed, instead of
wedges; the rest must be made in iron, with the requisite
adjustments for placing it close to the work, at that part
where it is required to be turned. To put the work in motion,
the centre pin or point in one of the puppets is made to
project considerably, and has a pulley fitted upon it, so that
it can turn freely round upon the pin by means of an endless
band or strap, which communicates the motion from a great
wheel. In these large lathes for iron-work, the wheel is
commonly turned by horses, or by a water-mill or steam-engine.

From the pulley a pin projects in a direction parallel to the
centre pin, and a piece of iron, called a driver, is screwed
or clamped fast upon the end of the piece of work, so as to
project from it sufficiently to be intercepted by the pin
which is fastened into the pulley; by this means, the motion of
the pulley is communicated to the work. The tools
employed for turning iron and other metals are different from
those used for wood, as we shall afterwards describe.

The spindle or mandrel lathe will turn hollow or internal
work, and is equally well adapted to turn centre work as
the centre lathe. In Plate Turning, fig. 1, we have given a
representation of one of these, which is on a very good
construction, made by Meirs, Holtzapfel and Deyerlen: it
is put in motion by the foot, so that the turner has both his
hands at liberty to direct the tools. A A are upright legs,
to support the bed B, which consists of two pieces of
bars of cast-iron, put together, and leaving a small crack
between them; C D is a cast-iron frame, which is fastened
down upon the bed B, and supports the spindle or mandrel
a b: E is the back puppet, which is used to support one end
of a piece of work, as is shown in the figure at G, when
the other end is fixed to the end of the mandrel, and turned
round by it: the back puppet, E, has a cylindrical pin
accurately fitted into it at the upper part, and the end of
the pin is formed to a sharp conical point, proper to penetrate
and support the end of the work: this point is called the
back centre. A screw is tapped into the puppet, so as to
press on the opposite end of the pin, and force it towards
the work; and there is likewise a clamp screw, E, at the top,
to bind or loosen the pin into its socket. The back puppet
is fastened down upon the bed, by means of a tenon
entering into the groove, through the bed B, and a screw
defends from the tenon quite through the bed, and
projects beneath it: upon this screw a nut g is tapped, and, by
turning it, the shoulder of the puppet E is drawn down
firmly upon the bed; but when the nut is loosed, the
puppet can be slipped along the bed to place it at any
required distance from the end of the spindle, according
to the length of the piece of work G. It is necessary that
the point of the back centre should in all cases be precisely
in the collars, which collars should be also made of steel,
and hardened, so as to have little friction. The neck of a
mandrel must be very accurately fitted into the collar, so as
to have no shake or looseness, at the same time that it can
turn round quite freely.

The neck at one end projects beyond the collar, and the
projecting part is formed to a screw, for the purpose of fix-
ing the work to it. A variety of pieces, called chucks, are
fitted upon this screw, and each chuck is adapted to hold
a different piece of work: the chucks screw up against a
shoulder on the end of the mandrel, and by the motion of
turning round in the direction in which the lathe works, the
chuck screws itself fast on against the shoulder; but if the
lathe is flopped, and the chuck is turned in the opposite
direction, it will unscrew and come off, and a different chuck
may be put on. In some lathes, the neck of the mandrel
is perforated, and cut within and out, with a female screw adapted
to receive a male screw on the chuck: the effect is just the
same as the above described. The opposite end of the
mandrel to that on which the chucks are ferrewed, must
be supported either by a point or in a collar. In general,
the mandrel is made with a point at one end; and the other end,
which has the screw to fix the work to it, is formed with a
neck, proper to run in the collar, and with a shoulder on the
neck, to stop the neck from going through the collar.

The mandrel represented in the drawing has a neck and collar
at each end, for a purpose which will be explained. When
the mandrel is made with a pointed end, the point must be
received in the end of a screw tapped through the part D
of the frame of the mandrel, just in the place of the end a
of the mandrel. By turning this screw, the mandrel can
be adjusted to run very correctly in length; and to pre-
vent the screw from turning back when the lathe is in
motion, a nut is placed on the screw, beyond the part
d: this causes such a prelance upon the threads of the
screw, that it is in no danger of turning back, as it would
otherwise do with rough work. The mandrel, by this
means, runs very readily and accurately in its bearings,
it is plain that any piece of work, which is firmly attached
to the end of it by means of the screw before mentioned,
may be turned by a tool held over the reel, in the same manner
as if it were mounted between centres, but with the advantage
that it be turned at the end, to make hollow work when
required.

The mandrel is turned round by a band of catgut passing
round the pulley b, and also round the large foot-wheel H,
which is made of cast-iron, and fixed on the end of the axis I.
This axis is bent in the middle, as in the figure, to form a
crank, which crank is united, by an iron link K, to the tread-
le L, on which workman presses his foot. This tread-
le is affixed by three rails to an axis M, on which the treadle
moves. The wheel H is of considerable weight in the rim,
and being fixed fast on the axis I, turns round with it: the
momentum acquired by the wheel is the power that con-
tinues to turn the work while the crank and treadle are rising,
and consequently while the workman exerts no power upon
them.

When the crank has passed the vertical position, and be-
gins to descend, the workman presses his foot upon the treadle,
to give the wheel a sufficient impetus to continue its motion
until it arrives at the same position again. The length of the
iron link K, which connects the crank with the treadle, must
be such, that when the crank is at the lowest position, the
board L of the treadle, to which the link is hooked, should
hang about two or three inches from the floor. To put the
lathe in motion, the turner gives the wheel a small
turn with his hands, till the crank rise to the highest,
and

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passes a little beyond it; then by a quick tread he brings the crank down again, putting the wheel in motion with a velocity that will carry it several revolutions: he must observe to begin his next tread just when the crank passes the highest point, and then it will continue running the same way with a tolerable regular motion, if he is punctual in the periods of his treads. The foot-wheel, by means of the band, cauves the mandrel to revolve very rapidly, so that it will perform its work very quick, and the workman must acquire a habit of standing steadily before his work, that he may not give his whole body a motion when his foot treads and falls with the treadle.

The reft N of this lathe is fixed on the bed of the lathe by its foot, which is divided in the manner of a fork, to receive a ferrwell-bolt: this bolt passes down through the lathe-bed, and fastens the reft at any place along the bed, by a nut & beneath. The groove in the foot is for the purpose of allowing the reft to be moved to and from the centre of the work, to adfult it to the diameter of the work which is turning. The height of the reft is a matter of some importance in turning, and in some work it should be fixed higher than others; therefore the piece upon which the tool is laid, is made with a Shank of the form of the letter T. This Shank is a round pin, and is received into a socket in the foot of the reft, and can be held at any height by a clamp-ferrwell. As the focket and Shank are cylinrical, the edge of the T of the reft can be placed inclined to the axis of the work when turning cones, or other similar work, though the fame purpofe may be accomphlihed by the ferrwell, which holds the foot of the reft down to the bed of the lathe, admitting the fork to f tand in an oblique direction across the bed.

The wood-turner employs gouges of all sizes, and chiffels of different forms; the gouges are used in the firft instance to rough out and form the wood, as they cut very rapidly, because they can take a very ftrong chip, and the angles will not flick in, as would be the cafe with the chiffels. The latter are used to smooth the work, and to reduce it exactly to shape and figure.

The blade of the turning-gouge is formed nearly half round to an edge, and the two extreme ends of this edge are a little flopped off, in the manner of an apple-foon, that the middle part of the edge may cut away the prominences of the work; and it has no corners, which would catch and get faft in the rough wood. The hollow part is whetted upon a piece of Turkey-foon, made with a convex edge, for the purpofe; the outifde is whetted upon a common flat Turkey-foon, taking care to turn the gouge round, that all parts of the convex edge may fucceffively be sharpened. In turning, the blade of the gouge muft be held confiderably inclined, by depriving the handle (fee fig. 42.), fo that the bevel, or outifide of the edge of the gouge, may come very nearly in the tangent to the circumference of the work, and the cutting edge be above the level of the centre. The turner holds the tool down firmy upon the reft, keeping it fealy, by placing the long handle under his arm.

The turner’s chiffels are mostly ground with a bevel on both the flat fides, fo that either fide may be indifferently applied to the work: they are ground up and sharpened on the oil-foon to a keen edge. In fome chiffels, the line of the edge is inclined to the direction of the blade, inftead of being perpendicularly across it, as in the chiffels used by carpenters; in others, the edge is rounded to a femicircle, inftead of being a ftraight line; and others are made with angular points, like fpears. It is difficult to decribe the proper ufe of each particular tool, as the turner muft employ one or other, according to the particular part of the work which is to be executed. In using the chiffel, the reft is railed confiderably above the centre of the work, fo as to be nearly on a level with the top of it (fee fig. 41.), and the line of the cutting edge muft fland oblique to the axis of the cylinder, fo as to prevent either angle of the chiffel from running into the work. It is neceffary to traverfe the chiffel gradually along the work, but not too faft, otherwife it will leave a roughnefs on the Surface.

The turning-tools fhould be fixed in long handles, and the turner holds them firmly down upon the reft, fteadying them by placing the end of the handle under his arm.

The turner fhould be provided with a grindentone, and an oil or Turkey-foon to fharp en his tools; and he muft have callipers and gauges to afcertain the dimensions of his work. In order to fix the work in the lathe, he muft have a great afcouragement of chucks. The chucks for wood-turning are blocks of wood, each having a ferrwell, by which it can be attached to the mandrel. The end of the chuck being turned true, and the fhouder of the ferrwell upon the mandrel being also turned true, the chuck fixes fo tight to the fpindle, that it becomes as it were one piece with it. Most of the wood chucks are bored out like a box, and the work is jammed into the cavity. There are other chucks, which are only flat round boards, and the work is cemented or fereved againft them; but the generality of chucks are cylinrical blocks, with a cylinrical or conical hole turned in the end, like a box, into which the piece of wood to be turned is driven faft, fo as to be turned round with the mandrel. The chucks are generally hooped with iron, to prevent them from splitting. When centre-work is to be turned in a mandrel lathe, a chuck muft be fereved on the end of the mandrel, which terminates in a sharp conical point.

The lathe fhould be fixed in a place very well lighted; it fhould be immovable, and neither too high nor too low.

The puppets fhould neither be so low as to oblige the workman to floop in order to fee his work properly, nor so high, that the little chips, which he is continually cutting off, fhould come into his eyes.

The piece of wood to be turned fhould be rounded, before it is put in the lathe, either with a small hatchet made for the purpofe, or with a plane or rafe, fixing it in a vice, and having it down till it is every where almost of an equal thicknefs, leaving it a little bigger than it is intended to be when finifhed off. Before putting it in the lathe, it is also neceffary to find the true centres of its two end furface, fo that they fhall be exadly oppofite to each other, in order that, when the centre points of the puppets are applied to them, and the piece is put in motion, no one fide may project out more from the centre line than another. To find these two centres, lay the piece of wood to be turned upon a plank, open a pair of compaffes to almost half the thicknefs of the piece, lay one of the legs on the plank, and let the point of the other mark on one of the ends of the piece when laid flat on the plane with the plank, like a roller, from which plank the point of the compaffes stands up at a given height above the plane on which the piece lies. Describe four marks or arcs on that end at equal distances from each other round the circumference of the end, by laying the piece fucceffively on four different fides, which arcs interfecving one another, the point within the interfec tions will be the centre of the end. In the fame manner, the centre of the other end muft be found.

After finding the two centres, make a small hole at each of them, into which infert the centre points of the back centre and the mandrel, and fereve up the back centre, to fix the
the piece so firmly as not to be shaken out, and yet loose enough to turn round without difficulty.

This is the manner of fixing the work when it is to be turned between centres; but if it is required to be hollowed out, the back puppet is removed, and the work must be fixed in a chuck at the extremity of the mandrel. For this purpose, a chuck is selected which has a hole in it nearly the size of the piece of wood, the diameter of which being taken in the callipers (fig. 35.), the chuck is screwed to the mandrel: the reft is fixed in a convenient position, and the hole in the chuck turned out by a proper tool to the size measured by the callipers: the hole should be rather conical, and the wood, being rabbed to the same figure, is driven in falt by a hammer. By turning the mandrel slowly round, it will be seen if the wood is fixed ftrait in a line with the mandrel, and if not, a blow or two of the hammer, properly directed, will rectify it.

If the piece of wood is not very long, the chuck will be sufficiently to hold it firm while it is turned; but if it is not, then a small centre hole must be made in the extreme end, and into this the point of the back centre screw must be inserted to fteady the work, until the rough part of the turning is done, and then it may be removed; but it is much more convenient to turn without the back centre, and therefore the turner fits the chuck to the wood with care, so that it will fix falt in the fuch.

The work being thus chucked, or fixed in the lathe, the reft is fet, so that its edge is close to that part of the work which is required to be turned, and the top of the reft being raised considerably above the level of the centre of the work, it is there screwed falt.

The turner now puts the lathe in motion by treading with his foot, and takes a gouge, of a proper size, in his right-hand, and holds it by the handle a little inclined, keeping the back of the hand lowermost: he grasps the blade of the tool with his left-hand, the back of which is to be turned upwards, and he holds it as near the end as possible on the front fide of the reft; then leaning the gouge on the reft, he is to present the edge of it a little higher than the horizontal diameter of the piece, so as to form a kind of tangent to its circumference: see fig. 42. This is the beat position for cutting, and the tool must be held very firmly, to prevent the edge being depressed by the motion of the work, for if it does, it will take hold too deep, and tear the wood. The gouge is applied first to one end of the work, and gradually advanced to the other, turning the work true all the way, and reducing it till the callipers (fig. 36.) determine it to be near the intended diameter.

The chiffel is next employed to smooth the cylinder: its handle is held in the right-hand, whiff the left grasps the blade, and keeps it feady upon the reft, holding the edge a little inclined over the work, as in fig. 41.; so that one fide of the flat part of the blade lies on the reft, and the other fide is elevated, that the plane of the blade, and consequently the line of the edge, is not horizontal, but inclined thereto, so that one corner of the edge of the chiffel is elevated above the work: then the bottom of the edge of the chiffel, or near the bottom, cuts away a shaving from the work, and this is the only way in which it will cut; for if the edge of the chiffel is held parallel to the axis of the cylinder, it acts parallel to the length of the grain of the wood, feraping away the fibres, one by one, without cutting, and leaves a very rough surface. In the fame manner, the narrow chiffsels, formers, and other instriments, are to be used according to the work which is to be done, taking care that the wood be cut equally, and that the instriment be not pushed sud- denly forwards, or sometimes more strongly than at others; and taking care also that the instrument does not follow the work, but that it be kept firm on the reft, without yielding. The gouge and chaffe are the instruments by far the molt frequently used, and the molt necessary in this art. Soft woods are almost entirely turned by them.

To make the end of the work exactly flat, the thin fide of the chiffel is laid upon the reft, so that the plane of the edge may ftand exactly upright. The hand is depressed, that the lower corner of the edge may rise against the work, and cut a deep circle into it, near the end, and being steadily advanced, cut to the centre, separating a thin round chip, and leaving the end quite flat. The cutting corner of the chiffel must be directed exactly perpendicular to the length of the work, in advancing it, otherwise the end will be either concave or convex, and care must be taken to keep the plane of the edge truly upright, and hold it very firm, for there is danger of the work drawing the chiffel into the end of it, with a deep spiral cut, like a fcrew, and tearing the work out of the chuck.

A cylinder of wood being formed by the process we have just defcribed, if it is required to turn it hollow withinfide, the reft is fixed opposite the end of it, with the edge of the reft perpendicular to the length: then a fharf-pointed tool is used, to bore such a hollow in the end as will form the required cavity, using the inside callipers (fig. 35.) to determine the size of it. The fide-tool, which is made with a cutting edge on the fide, like a knife, may be used, if it is required to make the bottom of the cavity fquare; or a hooked tool, with the cutting edge at the end of the hook, may be employed to enlarge the inside to the proper fize: the gauge (fig. 34.) is used to determine the depth to which it is to be turned.

This is the procefs for turning foft woods, which are generally of a fibrous texture; but hard woods, ivory, and bone, are turned with different tools. The points or cutting edges of fome fuch tools are represented in figs. 23. and 24.; they are bevelled only on one fide, and the angle of the edges is obtuse. The round-pointed tool, and the fharf angular-pointed tool, are thole employed for firk roughing out the work, and by them a number of contiguous grooves are cut in the wood, until its grain is broken and divided, and the irregularities reduced; then an edged tool can remove the remainder: but as the edged tools will only cut or frape off thin shavings, they are not used when the work is to be reduced to fize, but only to finish it. The manner of applying the tools to the work is fhown in fig. 39. and is nearly the fame as for turning fbras, or other foft metal: the upper face of the tool is directed to the centre of the work, the intention being to fcare away shavings in hard wood, and in foft to cut chips, as at fig. 41. and 42. The graver (fig. 40.) is a veufeful tool for hard wood: the manner of using it, as well as other tools, will be defcribed when we come to speak of turning in metal.

After the work is completely turned, it is next to be polished, and this cannot be done with the instruments hitherto mentioned. Soft woods, as pear-tree, hazel, maple, &c. ought to be polished with fharf-fkin, or Dutch rubes. There are different species of sharks, some of which have a greyish, others a reddifh skin. Shark's skin is always better when it has been used; at firl, it is too rough for fine polishing.

The Dutch rub is the equifetum hyemale; it grows in moif places, among mountains, and is a native of Scotland. The oldest plants are the best. Before using them, they should be moistened a little, otherwise they break in pieces almost directly, and render it exceedingly difficult to polifh with them: they are particularly proper for smoothing the
hard woods, as box, lignum vitæ, ebony, &c. After having polished the piece well by such means, it should be rubbed gently either with wax or olive-oil, then wiped clean, and rubbed with its own turnings or shavings, or with a cloth a little warm. Ivory or horn is polished with pumice-flone or chalk, finely pounded and put upon leather, or a linen cloth a little moistened with this; the piece is rubbed as it turns round in the lathe; and to prevent any dirt from adhering to any part of it, every now and then it is rubbed gently with a small brush dipt in water. To polish metals very finely, the workmen make use of a particular kind of earth called tripoli, and afterwards of putty, or calx of tin. Iron and steel are polished with very fine powder of emery; this is mixed with oil, and put between two pieces of tin or pewter, and then the iron is rubbed with it. Tin and silver are polished with a burnisher, and that kind of red flone called blood-flone. Iron and steel may also be polished with putty, putting it dry into flarnoy-flcin.

All kinds of articles in wood are turned in the above manner; but many contrivances are necessary to mount different things in the lathe.

The small figures in the plate represent various chucks, which are occasionally employed, and which are adapted for turning different kinds of work.

Figs. 2 and 3. exhibit a small wood chuck, which is adapted to be screwed to the mandrel at a, a hole being perforated in the centre of it, at b, into which a small piece of wood or ivory is to be inserted, in order to turn it. To hold the work fast in this chuck, it is divided at the end b by two faw-kerfs, at right angles to each other, as shewn in fig. 3. so as to separate the end into four segments, which admit of expanding or closing: a hoop or ferril is fitted on the outside of the chuck, which part is made tapering, so that forcing the ferril farther on, will close the four segments together, and bind fast upon the work, which is introduced into the cavity b. This is a very convenient chuck for holding small pieces of ivory, and particularly for the purpose of polishing.

Figs. 12 and 13. exhibit a similar chuck, made in brafs, for more delicate work; it is only divided into two segments.

Fig. 4. is a brafs box, to screw to the mandrel, and hold a wood chuck, such as we have before explained. Wood chucks are usually made to screw on the mandrel by means of a hole in the chuck, which is cut with a female ferril within. The objection to this mode is, that the threads of the ferril on the wood wear away by constant use. In fig. 4. a brafs female screw, a, is cut to fit the ferril of the mandrel, and at the other end, b, is a box, also cut with a ferril within, into which the wood block or chuck is screwed, as shewn by the dotted lines, so as not to come out without great force: by this means, the fitting of the chucks to the mandrel is not with a wooden screw, as in general, but with a brafs one, which will not be liable to get out of the truth, but will always screw up to the same shoulder. The lathe should have at least two dozen of these wood chucks, with cavities of different sizes, and some of them hooped with iron at the outer end, to prevent them splitting. The brafs box is a great security against splitting.

Fig. 5. is a very useful arbor for turning wheels, collets, or any other flat piece of work that will admit of having a small hole in the centre of it. A brafs fcrew-chuck, a, is fitted to the mandrel, and a steel pin, b, is fixed into it, and projects an inch or more: the pin is turned true, and the work is fitted fast upon it, either by turning the pin to the size, or by broaching the hole in the work; and to prevent the work from slipping round upon the pin, it is pinched fast up against the flat surface of the chuck, as shewn by the dotted lines, by a nut d, which is screwed on the end of the steel pin b: by this means, the work will be held fast, and will be carried round by the chuck, so as to be turned by the application of proper tools upon the reed. These kinds of arbors should be of all sizes, to fit the holes in different wheels, &c.

Fig. 10. is a brafs chuck, which is very useful for holding small pieces of brafs work; it screws to the mandrel at the end a: the hollow part, b b, has six fcrews tapped through it, and pointing to the centre, as shewn in fig. 11. By screwing in these fcrews, their points will pinch upon any piece of work which is put into the chuck, as shewn at d, and will hold it firm. The fcrews being regulated, admit of adjusting the work d to a true centre with the line of the mandrel.

Figs. 16 and 17, are views of chucks having similar properties to the preceding: a (fig. 16.) is the end which is screwed to the mandrel; b b is a circle of brafs, having a mortice or opening across the centre of it, as in fig. 17; into this opening two steel dies are fitted, and fcrews d, d, are placed behind them, to approach them together: the fcrews come through the outside of the chuck, and have square heads, which are to be turned by means of a key. The adjacent surfaces of the two dies are hollowed, so that they will embrace a piece of wire or other similar substance which is put between them, and the dies may be cut like a file, to hold it fast. By means of the two opposite fcrews d, d, the work may be adjusted to the centre line of the mandrel.

Figs. 20 and 21, are a table-chuck, proper for holding wheels or flat plates by the circumference, whilst the centre parts are turned: a is the fcrew to fix it to the mandrel; b b, a large circular plate, turned perfectly flat on the front surface. In this plate are grooves, pointing from the centre to the circumference, as shewn in fig. 21: the grooves are adapted to receive clamp-pieces, d d, by means of which the wheel or other work is bound fast against the flat surface of the chuck. The grooves admit the clamps d, d, to be placed at any distance from the centre, according to the size of the work, and to place them at those parts where it will be most convenient to apply them.

The form of these clamps is shewn more particularly in fig. 22: f are fiders of metal, which are fitted to the grooves in the chuck; and the grooves are dove-tailed, so that these fiders can be put into the grooves at the back of the chuck, but will not draw through the grooves into the front. Screws are tapped into the fiders, and draw the clamps, b, against the face of the chuck, and hold fast the work, which is placed beneath their claws. The clamps, b, have shanks projecting from them at right angles, which pass through the grooves, and keep the clamp from turning round to one side.

Figs. 35 and 36, represent the calipers used by turners to take the measure of their work: they are made of two curved pieces of steel-plate, united together by a joint. When they are opened, as in fig. 35, the dimensions of a round piece of work may be conveniently taken between their points, as shewn by the dotted circle; but if the points are closed together, as in fig. 35, so that they pass each other, then the calipers are adapted for measuring the diameter of internal cavities, by the distances of their points from each other.

Several other kinds of calipers are used by turners, but these are the most convenient, as they serve equally well for inside and outside dimensions. Some calipers are made double, like a pair of scissors; and the points at one end are for inside measures, whilst the others are for outside measures; and the distances of all the points from the joint being exactly the same, the inside measure of any hollow being
being taken by one end of the callipers, the opposite end will be readily opened to the requisite dimensions for a solid to fill such hollow.

Fig. 34. is a gauge for measuring the depth of hollow work. A is a ruler, through which is a socket to receive another ruler B; and a clamp-screw is fitted through the side of the socket, to hold the ruler, B, fast in the socket. The edge of the ruler, A, is applied to the end of the work, and the other ruler is then slid through its socket, until the end of B touches the bottom of the cavity; and in this state, the clamp-screw being fastened, the gauge may be applied to the piece of work in the lathe, to ascertain if the cavity is turned out to the required depth.

Fig. 6. is a chuck for turning wood when it is a long piece, which will admit of being supported at both ends, or between centres, as it is called. The chuck has a screw within the part a, to fix to the mandrel, and the other end is of steel, with a pin b in the centre; and on each side of the pin is a sharp edge c, like a chisel, the line of the edge pointing to the centre of the pin. When a piece of wood is mounted between the points of this centre pin and of the back centre, as we have before described, if the back centre screw is turned, it will force the piece of work against the mandrel and the pin b, and the edges c will penetrate into the opposite end of the wood; in this case, the motion of the mandrel and chuck a will be communicated to the wood, to turn it round. The centre pin b is made to project beyond the edges c, and by this means the work may be removed from the lathe, and put in again if required, because the centre pin will enter again into the same hole in the end of the work, and restore the work to its original position.

Fig. 7. is a chuck for the same purpose, but it is made with a flat circle of brass, and three pins, c, are fixed in it instead of the edges c. This kind of chuck is shown in use in fig. 1, to turn a pillar for a halberd.

When a piece of metal work is to be turned between centres, the edges or points of the lathe chucks cannot be made to penetrate the end of the piece, and therefore a small chuck, (figs. 14. and 15.) is screwed to the mandrel: in the end of this chuck, at b, is a hole, which is made square with the centre, and the work has a square filed at one end to fit the hole. The other end of the work is supported by the back centre, a small hole being made in the end to receive its point; or if the end of the work is sharp-pointed, the back centre pin is drawn out of its socket, and turned end for end: the end of the pin opposite to the point has a small centre hole for the reception of such pointed work. Iron and steel work may be turned very conveniently by means of a square, but not very accurately; and after the work has been taken out of the lathe, and the square cut off, if it be required to turn the work again in the lathe, it is very difficult to find the true centre.

All works requiring great accuracy, as arbors, screws, axes, spindles, &c. are turned between centre points, thus: a chuck (fig. 8.) is screwed to the mandrel by the screw in the part a, a steel centre point b being formed at the end of it. The point is turned very truly, to be exactly in the centre line of the mandrel. The work is mounted between this point and the point of the back centre; and to communicate the motion of the mandrel to the work, a driver (fig. 9.) is screwed fast on that end of the work nearest the chuck. The driver is an iron ring, with a screw d tapped through one side of it, to pinch the work so fast as to prevent the driver slipping round upon the work; and on the side opposite to the ring is a projecting tail f.

The chuck (fig. 8.) has a steel claw k e fitted through it, and fastened by a screw: the end of the claw is bent at e parallel to the direction of the mandrel, so that the end of it will catch the tail f of the driver, and turn it round, together with the work on which the driver is fixed.

The fret k of the claw slides in and out of the socket, through the chuck, in order to remove the claw e to a greater or less distance from the centre point b, and adapt the chuck to operate upon different sized drivers, for delicate or large work. This is the most accurate method of turning iron work in a mandrel lathe, because the centre points at the ends of the piece are preferred. When one end of the work is finished, the driver may be shifted to the other end. Such work may at any time be mounted again upon its original centre points, in any kind of lathe, to turn wheels, collets, &c. which may be fitted upon it.

The form of the driver is shown in fig. 30. In order to make it fit different sizes, the side of the ring opposite to the screw d is made angular, and the point of the screw forces the work into the angular part.

This driver may be fixed on either end of the work, whilst the other end is turning; but when it is necessary to fix the driver on that part of the work which is finished, the end of the screw d is apt to pinch and bruise it; it is therefore proper to interpose a piece of iron between the point of the screw and the work. But it is better to use the driver shown in fig. 31: it is composed of two bars of iron, united by two screws passing through one bar and tapped into the other; both bars are somewhat hollowed out in the middle, that they may encompass the work. If this should be found to injure the work, a piece of sheet-lead wrapped round it before the driver is put on will prevent it from damaging the work; and if the screws of the driver are drawn very tight, it will carry the work about with sufficient force to bear turning.

When a piece of iron or steel work is to be turned, the centre points at the ends must be found with great precision before it is turned, because it is difficult to cut away great protuberances in metal. The centres are first found by the compasses, and marks are slightly punched in the ends by a conical-pointed punch. The workman now places the work in the lathe, between the points of the mandrel and that of the back centre, but without fixing any driver on the work; he then screws up the centres, so as to hold the work just tight enough to prevent its falling down. In this state, by turning it round with one hand, while he holds a piece of chalk against it with the other, he ascertains whether it is pitched nearly concentric on the points; and if it varies much at any one point, he turns back the screw to take out the work, and punches new centre points, or alters the old ones, taking care to move them nearer to that side which appeared to project farthest in revolving, and was of course marked by the chalk.

When he has, by repeated trials, found the true centre, he screws up the centre point so hard, that it may effectually mark the end of the work, by forcing the points to the bottom of the marks punched; then taking the work out of the lathe, he drills holes in the ends, at the places where the centre points have marked, and to such a depth, that the points of the lathe will not reach the bottom. When the work is again returned into the lathe, it will run very nearly concentric, and the driver being screwed fast on either end of the work, as is most convenient, the work will be turned round by the clutch projecting from the chuck.

The work is now ready for turning, which is done by different tools, and applied in a very different manner from the chisels and gouges for turning wood. Fig. 37. to 42. are different examples of the manner of turning metals: a tool applied in the manner of fig. 39. operates very well upon
upon brafs and bell-metal. The cutting edge should be
ground nearly to the angle which is there represented,
and the upper side should be directed nearly to the centre of the
piece; the edge will then scrape away shavings from
the metal. The tool has some tendency to retreat backwards
from the work, and must be held firmly thereto. The edges
of tools, applied as shewn in fig. 39, may be formed to
any of the shapes shewn in figs. 23. and 24. the angle of the
cutting edge being in all cases nearly the same.

The graver (fig. 40.) is an extremely useful tool, and fit
for turning any metal or hard wood: it is a square bar of steel,
cut off obliquely, and the greatest obliquity of the cutting
plane is in the direction from one angle of the square to the
opposite angle. This produces a prominent point on one of
the angles, which point is applied to the work in the manner
shewn in fig. 40. and cuts off continuous shavings instead of
scrapings: this is owing to the direction of its edge, which
is disposed obliquely to the motion with which the work
meets the edge in its rotation. The turner should be pro-
vided with gravers of all dimensions.

Fig. 37. is the action of what is called a heel tool for
turning wrought iron or copper: the edge of this is applied
nearly in a tangent to the work, on the same principle as the
chiffel is applied to cut wood. The heel of the tool is placed
upon the reft, and being just opposite to the edge on which
the prejudice or drift of the work lies, the tool cannot
escape from its work, although the prejudice upon it is very
great, so much so, that it would be impossible to keep the
tool to its work, if it were held upon the reft, as in the case of
the wood chiffel, merely by the lateral friction on the reft.
The handle of the heel tool is long, and is held inclined up-
wards, so that the workman can reft the end of it on his
shoulder, whilst he holds it very firmly down on his shoulder
and on the reft with both hands. This firm position is
very necessary, because the heel tool is liable to draw
deep into the work, and take away too large a chip.
This tool will cut away thicker chips than any other, being
what the workmen term a greedy tool. The requisite height
of the reft, to make the edge of the tool a tangent to the
proper point, is a matter of importance, and requires the at-
tention of the workman, who can only learn the manage-
ment of this tool by experience. It is not well adapted
for finishing work with accuracy, but is very expedient in
roughing out wrought iron; it generates so much heat in
working, that it is necessary to keep it constantly wet; and
in large lathes, a conflant stream of water is made to fall on
the edge at the place where it is cutting. The graver and
all other tools work wrought iron and steel to the greatest
advantage when wetted.

Fig. 39. is the tool used for turning cast-iron; this sub-
fstance must be scraped away, and it is plain from the figure,
that the cutting edge is presented very nearly in the fame
manner, with respect to the work, as in fig. 39; but from the
hardness of cast-iron, it requires a very considerable force to
press the edge against the work, and it would be impracti-
cable to hold it up effectually on the plan of fig. 39; hence
the tool in fig. 38. is bent at the end, and is lodged over the
edge of the reft, in the manner of a lever; the handle is pre-
ed down at the extremity, and lifts up the edge against the
work with very great force. The workman must bear on the han-
dle of this tool with the requisite prejudice; and in large work,
such as cannon and mill-shafts, he usually lets himself upon
the end of the tool, which is made very long in the handle.

Different substances require different velocities of motion
to cut with the greatest advantage. Wood can scarcely be
made to move too quick; and it is always preferable to take
a very thin chip, and move as quick as possible, than to move
slowly, and compensate for the loss of time by cutting deep.
Brass and bell-metal may be moved very quick,
but not with half the velocity of wood. Wrought iron
and copper must be turned more slowly, and the tool must be
kept wet. Steel should go rather slower than wrought iron,
for it is liable to have hard veins in it, which the workmen
call pins: these will be cut through if the work moves
slowly, but with a quick motion they will destroy the edge of
the tool: this makes some workmen think that the pins
are actually formed, or that they become hard during the
operation of turning, if too great a velocity is used. Cast-
iron must move very slowly, indeed it can scarcely turn too
slowly, and the tool applied as at fig. 38. will cut a thick
chip.

To obtain these different degrees of velocity, the foot-
wheel of the lathe fig. 1. is made with several grooves of dif-
f erent diameters, and the mandrel pulley b has also different
izes. A band can be applied upon any of these grooves at
pleasure, and the workman finds by experience what velo-
city is best for different kinds of work.

The most experienced workmen prefer a centre lathe to a
mandrel lathe, when they have to turn accurate iron-work,
which will admit of being poised between centres; and it is
obvious, that the revolving motion of the centre point at the
end of the mandrel is of no use; and if the point should be the
leaf out of the centre line, or if the mandrel has any shake
in its collar, the work would not be turned truly. But in a
centre lathe, where both points are fixed immovably, or,
as the workmen say, with dead centres, this cannot happen;
and if the work is screwed up tight between the centres, so
that there is no shake, the centre points at the ends of the
work must be precisely in the centre line of the work.

The manner of giving motion to a piece of work in the
centre lathe is, as we have before described, by a loose pulley
fitted on the centre pin, and from this pulley a pin project-
s in a direction parallel to the centre line, so that it comes
effectually in the place of the claw s (fig. 8.), and turns the driver
round when the pulley is put in motion by the band, either
from a foot-wheel or hand-wheel.

When the mandrel lathe is used for centre work, the
centre of the chuck must be turned very exactly, so that
it does not vary in the least from the same position when it
turns round; and in all cases, the mandrel must be fitted with
the most scrupulous accuracy into its collar, so that there
will be no shake; for unless this is the case, the lathe will
not turn chuck-work with any accuracy.

Mefirs. Holtzapfel and Derien make very excellent lathes on the plan represented in fig. 1. The bed and the
puppets are made of cast-iron, and very correctly fitted,
such lathes posses great strength: some of them are fitted
up, as in the figure, with a pattern ferew at the end a of the
mandrel, for the convenience of cutting ferews on work.

For this purpose, the mandrel is fitted in a collar at each end,
and the necks are cylindrical, so as to admit of the mandrel
moving endways at the same time that it turns round.
On the extreme end of the mandrel, beyond the collar D, a pattern
ferew is fixed, which has the diface of its threads corre-
sponding with the ferew that is defined to be cut upon the
work, which is fixed in the lathe by a chuck: a piece of
brass, n, is provided, which is cut with threads adapted to the
pattern ferew, and which can, by turning a ferew, be drawn
up against the pattern ferew, so as to work in its threads;
and in this state the mandrel, at the same time that it turns
round, will move endways in its collars with a screwing mo-
tion; and in consequence, a pointed tool being preferred to
the work, and held fast on the reft, will cut a spiral groove or
ferew upon its circumference. This contrivance is more
fully
fully explained in the article Rose-Engine. It is the most convenient method of all others for cutting screws, and very accurate, if the pattern screws which are fixed on the mandrel are correctly cut. For all purposes of wood turning, it is undoubtedly the best method, and far preferable to the common one of cutting screws flying, as it is called, that is, by means of the tools 32 and 33, which are applied to the work, and moved along endways at the same time that the work turns round, so that they cut a spiral. (See Rose-Engine.) The rapidity and accuracy with which some workmen cut screws in this way exceed belief; but it is only by long experience that this habit can be acquired, and for those who have not had such experience, some mechanical help is necessary. The objections made by accurate workmen to the flying or screw mandrel are, that as the necks must be cylindrical, it cannot be kept so perfectly fitted in its collar as the common mandrels, which have a point at the extremity, and the neck at the other end is made slightly conical, so that it can always be screwed up to fit in the collar. Mr. Holtzapfl's mandrels are made of hardened steel at the necks, and the collars are also hard; they are accurately fitted, and have no shake when new. From the hardness of the materials, they will wear a long time before they get any looseness.

Mr. Maudslay has the most complete set of tools for all kinds of mechanical works at his manufacture, and is particularly well provided with turning apparatus. All his lathes are made with triangular bars, such as is described in our article Lathe, and the mandrels are all formed with conical necks and collars. The bar lathes are very accurate, particularly when the slide-rest is applied to them, as there described. The bed lathe may also have a slide-rest applied, as is shown under Rose-Engine.

If a piece of metal, after being properly turned, is to be bored hollow within, like a gun-barrel, the back puppet is to be removed from the bed of the lathe, and another substituted in its place, having a hole or collar through it, into which the neck or end of the iron is to be correctly fitted, the other end of the iron being supported and turned round by being fitted into a chuck at the end of the mandrel, or else by means of the centre point at the end of the mandrel, and with a driver, as in fig. 8 and 9. The rest is to be set opposite the end of the piece where it comes through the collar, and drills or borers are to be applied, similar to those used by locksmiths in boring keys, beginning with a small one and afterwards using larger ones, until the hole is made as wide and deep as necessary. The borers must be held very firm on the rest, otherwise there is danger of not boring the hole straight. The borers should be withdrawn from time to time, to oil it and clean the hole. As it is difficult to make a hole quite round or concentric with the outside by means of borers alone, it is necessary to have also a turning tool considerably smaller than the hole, one of the fides of which is sharp, very well tempered, and a little hollow in the middle. This instrument being fixed in a long handle, is to be introduced into the hollow, and applied with a feed in to the inner surface of the hole, and it will entirely remove every inequality that may have been there before its application.

The collar puppet is only refitted to, when the piece which is to be bored is of considerable length; for if it is short, it will be held sufficiently fast in the chuck, without the necessity of supporting the extreme end.

A collar puppet is sometimes necessary in turning centre work when the work is long, and so slender, that it bends or springs by the strains of the tools: the collar is then applied to support the work at the part where it is weakest and bends most.

Turning of elliptical or oval Works, such as Picture-frames, Snuff-boxes, &c.—This is performed in the same lathe, and with the same tools, as the circular work; but the lathe is provided with a chuck, which causes the work to traverse in a very curious manner, by a motion given to it in a direction to and from the centre of the mandrel as it revolves; so that a tool held up against the work will cut an elliptical figure instead of a circle. Elliptical work has a very singular appearance when in motion; for after the work has been turned truly elliptical, every part of the circumference, except the exact point where the tool was applied, appears to vibrate, or be eccentric in a great degree, but that one point of the circumference runs perfectly true and regular, the fame as the whole circumference of a piece of circular work does. The mode of action of this ingenious apparatus is rather difficult to describe, and it is first necessary to understand the principle of its action. This is the same as the trammel or elliptic compasses; see fig. 29. An octagonal or square board A A, B B, has two grooves cut in its surface, which intersect each other at right angles; this board is held down upon the surface where the ellipse is to be described, with the centre lines of the grooves coincident with the two diameters of the intended ellipse, and of course their intersection will be the centre. The curve D D is traced beyond the circumference of the board, by means of a pen or pencil, which is fixed at F, to a radial bar or beam F G H; this bar carries two other points or pins, G and H, which are attached to sliders, inserted into the grooves of the board, as shewn in the figure: the sliders are fitted in truly, so that each of them will have a motion in its respective grooves: thus the slider of the pin H will move along A A; and the slider of G, along the groove B B. By turning about the beam F G H, the sliders go backwards and forwards in their grooves with a simultaneous motion; so that when the beam has gone one-fourth way about, one of the sliders will have moved from the circumference of the board A B, to the common centre of the grooves; and when the beam has gone half round, the same slider will have proceeded the whole length of the grooves, and arrived at the opposite side of the circumference. The same applies to the other slider, and when one slider is at the centre, the other will always be at the circumference.

The pins F and G H can be fixed at any part of the beam at pleasure, (though this is not so frequently in the drawings,) for the purpose of setting the trammel to draw any particular ellipse: thus, place the beam in the direction of the line A A, then the pin G will be in the centre of the grooves; now fix F at such a distance from the centre, as is equal to half the small diameter of the ellipse; and let H be so far distant from G, as the difference of the two diameters; consequently, F from G will be equal to half the longest diameter. Now, in turning the beam round from the direction A A, till it comes to the direction B B, the point G will depart from the centre along B B, and H will approach it along A A, till it gets to the centre. Then will the pencil F be so much farther from the centre, as G is distant from H, and the pin has in its circuit traced one-fourth of an ellipse. The beam being turned quite round, will complete the whole curve.

This apparatus may be applied to turning by some modification. Suppose the two grooves made in a round board, as large again as that represented in the figure; then, if the whole apparatus be inverted, and the beam F G held fast in a vice, or otherwise, the board with the grooves may be traversed round upon the fixed sliders, in the same manner as the beam could be traversed round upon the fixed board. Suppose a tracing point is held to the back of the board, exactly
exactly opposite to the place where the tracing point F is fixed to the beam, and held fast; it is evident that its point will trace the face ellipse on the back of the board, that was described on the surface which the board lay upon in the former instance: or a chisel being held fast in the fame spot, will cut the board elliptical when it is turned round; and the chisel being successively applied at different points along the line of the beam, a series of concentric ellipses may be turned in the board, to make mouldings for picture-frames or other ornaments. If the distance of the two fixed pins G and H, and the chisel F, is altered, it will vary the proportion between the two diameters of the ellipse, in the same manner as before described of the trammel.

The oval chuck is constructed in a different manner from this, though it prefers the same movements. It consists of three parts, the chuck, the slider, and the eccentric circle. The chuck c e f (fig. 27.) is attached to the mandrel by a screw-socket, cut in a piece f, which projects from the centre of it; and hence the chuck turns round with the mandrel with a circular motion.

The chuck has a dove-tailed groove, formed in it at the front side, for the reception of a slider g h, (fig. 26.) which travels freely in the groove: the groove is formed, as the figure shews, by pieces i, i, screwed to the chuck on each side. In the centre of the slider, in front, is a screw h; see also the plan, fig. 25. The screw h projects from the slider, and by means of it, a wooden chuck may be screwed against the slider, and any work can be fixed in the chuck in the usual manner. The work so fixed, at the same time that it turns round by the motion of the chuck, has a sliding motion across the centre, which motion being given according to a certain law, produces an elliptic motion. The sliding motion is given by the eccentric circle (fig. 28.); this is a ring of brass, attached fast to the puppet of the lathe, close to the collar, in which the neck of the mandrel runs. The mandrel passes through the aperture l; the ring has a flat plate, m, to strengthen it, and forming two bends at the ends m, m, which bends have screws tapped through them, and pointing exactly to each other: these screws are sharp at the points, and are inserted into small holes in each side of the puppet, as is shewn in the plan, fig. 25. At C, the back of the plate m of the circle lying flat against the front of the puppet C; by this means the circle is fixed fast; the two screws are horizontal, and both point to the centre of the mandrel b; therefore, by screwing one screw in, and the other out, the whole circle may be moved sideways horizontally, so as to give it any required degree of eccentricity from the centre line of the mandrel, and it will be held stationary wherever it is placed.

Fig. 27. is a back view of the chuck, and shews two grooves made through it in the direction of the length of the slider; these admit the shanks of two pieces of steel n, n, to pass through the chuck, and they are firmly attached to the slider g, by a screw for each in front of the slider, as shewn in fig. 26. The two inside edges of the pieces n, n, are exactly parallel to each other, and the distance between them is exactly equal to the diameter of the outside of the ring 28, which ring is included between them, when the chuck is screwed to the mandrel b, and the circle fixed to the puppet C, as shewn in fig. 25.

Suppose then the circle is set concentric with the mandrel; if the mandrel is turned round, it will cause the chuck a, and slider g, together with the work attached to the slider by the screw h, to revolve. The work will now run in a circle, and turn circular work as usual, because the slider is guided by means of its claws n, n, which embrace the circle; and will keep the same position in its groove in the chuck during all the parts of a revolution, because the circle is concentric with the mandrel.

To set the chuck for an ellipse, place the point of a tool opposite the work, at such a distance from the centre of the work, that it will describe a circle of a diameter equal to the breadth or smallest diameter of the ellipse intended to be turned. This is best done by fixing the tool in the slide-reel. Now turn about the mandrel, till the slider g comes horizontal, and let the circle 28 eccentric from the mandrel by its screws m, m; it will of course move the slider g in the groove of the chuck, and also the work will move with it to a greater distance from the centre, because the two steel pieces n, n, at the back of the slider include the circle between them. The quantity of eccentricity given to the ring, must be equal to the difference between the two diameters of the required ellipse, so that the work shall move, or throw out a sufficient distance, to bring the point of the tool as much beyond the circle first described, as the length of the ellipse exceeds the breadth. The point of the tool will now be at one end of the longest diameter, and here we will commence to trace the curve all round. In turning the mandrel round till the slider comes vertical, it must return in its groove to the place it first occupied, viz. the centre; because the eccentric circle which guides the slider is not eccentric in a vertical direction, though it is in the horizontal. In this motion, the point of the tool has cut or described one quadrant of an ellipse, because it gradually approached the centre a quantity equal to the eccentricity of the circle. By continuing to turn the mandrel round farther, the circle will cause the slider to move out the other way from the centre in its groove until it comes again horizontal, when it will be at the greatest throw out, as the turners term eccentricity, and the point of the tool will be at the other end of the longest diameter, having described one half the curve; continuing to move forwards till the slider becomes vertical, it will become concentric again, and the tool will be at the breadth of the ellipse, having finished three quarters of the ellipse; and in turning the next or fourth quarter, the slider throws out till it comes horizontal, and brings the work to the position where we first set out, viz. at its greatest eccentricity: and with the tool at the end of the longest diameter of the ellipse.

The simple trammel (fig. 29.) is not easily recognized in this complicated chuck, although it has all the same movements. Thus, let us return to our first idea of a board with two crofs grooves in the back of it, turning round on two fixed pins, which enter the sliders in those grooves. Suppose that one of the pins is extended to a large ring, and the groove proportionally widened to receive it, this will have the same effect. Such a groove is formed by the two pieces of steel n, n, which have straight edges made truly parallel to each other, and perpendicular to the length of the slider which carries them. The other fixed pin is represented by the mandrel; and the slider being always confined in a right line across it, has the same effect as a pin entering a straight groove.

This ingenious apparatus was invented early in the last century by the celebrated mathematician Abraham Sharp. Before his time, oval-work was always turned in a rote-engine, which had an elliptical pattern.

In turning oval work, the tools must be delicately used, because the circumference moves with an unequal velocity at different parts of its revolution.

Method of ornamenting turned Articles by an Excentric Chuck.
—This produces a similar effect to the rote-engine: but as a chuck of this description can be applied to any lathe which has a mandrel and slide-reel, it has been referred for the present article.

Figs. 18. and 19. are two views of an excentric chuck: a
is a socket, which is screw'd to the mandrel; and the chuck, which is formed in the same piece with the socket; a dovetailed groove is formed in the front of the chuck, by means of two pieces, which are screw'd to the chuck, and into this groove a slider, is fitted: to this slider a centre pin is fixed very firmly, and upon the centre pin a circle, \( f_i \), is fitted, so as to turn round freely; in the front of the centre a screw, \( g \), projects, for the purpose of fixing the chuck to the circle. The slider is applied to the chuck, just the same as in the oval chuck, but is not turned into the chuck, to slide into the grooves for a screw, \( k \), is applied, which will move the slider gradually in the groove, but always holds it fast where it is placed. By means of this screw, the centre pin of the circle, \( f_i \), can be made either to coincide with the line of the mandrel, or it can be set with any required degree of eccentricity from the mandrel, as is shewn in fig. 15, by the difference between the line of the screw \( g \), and that of the socket \( a \).

The circle is divided round the edge with notches or teeth, cut at equal distances; and a tooth or catch, \( b \), is fitted on the slider by a centre screw, and has a tooth which can be inserted into any of the teeth at pleasure, and will hold the circle fast from turning round upon its own centre pin. In this case, any piece of work, which is fixed to the screw \( g \), will turn round with the mandrel, just as though it was fixed immediately thereto. The manner of using this tool is as follows: when the eccentric chuck is screw'd to the mandrel at \( a \), the screw, \( k \), is turned, until the screw, \( g \), is brought exactly into the line of the mandrel. A wood chuck is now screw'd on at \( g \), and a piece of work fitted into it; which work is turned to its required figure, just as though the wood chuck was screw'd to the mandrel itself, without the intervention of the eccentric chuck, which hitherto has been passive. The work being turned, it can be beautifully ornamented on the flat surface, by tracing a number of circles upon it. To do this, turn the screw \( k \), until the centre of the circle, \( f_i \), is removed to a given distance from the line of the mandrel; now apply a tool to the end or flat surface of the work, by means of the slide-red, and turn the mandrel round, until the tool has cut a fine circular line in the surface of the work. Now it is evident that this circle will not be in the centre of the work, but removed from the centre thereof a distance equal to the degree of eccentricity given to the slider. Having thus described one circle, stop the lathe, and release the catch \( b \), and then turn the circle, \( f_i \), round one tooth or notch.

Put the lathe again in motion, and describe another circle by the point of the tool, held exactly in the same spot as before; but the circle so described will fall on a different part of the work to that which was before made, although its centre will be at the same distance from the centre of the piece of work. The lathe is stopped, and the circle, \( f_i \), turned round another tooth: a third circle is then described; and when as many circles are described as the whole number of teeth in the circle \( f_i \), the ornamenting is finished. It will consist of as many circles as there are divisions in the circle \( f_i \), all of an equal size, and their centres arranged at equal distances, around the circumference of a small circle, which is concentric with the work. The whole produces a rosette or engraved figure upon the surface of the work, and the numerous intersections of the eccentric circles have a very pleasing effect to the eye.

This kind of work is seen on the cases of many watches; and when well executed, is much esteemed.

**TURNING**

**Horizontal Hand-Mill, in Rural Economy,** an useful contrivance of the hand corn-mill kind. It was invented by Mr. Wright, and consists of a sort of tub or box; the frame of the mill-part of which is three feet square, and three and a half in height. The mill-stones are eighteen inches in diameter, and indented in the tub or box, supported by two cross-bearers, under which is a lever, having an iron pin or pivot, which runs through the centre of the bed stone into a socket in the bridge of the upper stone or runner, to which is attached the shaft and spindle, running through the eye of the runner and hopper, and supporting the fly-wheel and crank. A piece of wood of a round form, fastened on the shaft, serves as a feeder; and above is a screw to regulate the feed according as the mill is turned. On the side of the tub or box is a thumb-screw, fixed to the lever underneath, which regulates the stones, according as they are turned. The shaft runs through the crown-tree or cross-bar at the top of the frame, on which is the horizontal fly-wheel and crank; to which are attached one or two handles, by means of which the mill is put in motion. Under the stones is a drawer; in which are placed three drawers of different finesses; one for taking away the bran, another for the coarser pollard, and the third for stopping the fine pollard, and letting the flour pass into the drawer, which is effected by a fort of iron fork running through a hole in front of the drawer, and fixing on one of the hoes.

Small hand-mills of this nature are extremely convenient and useful in many cases.

**Turning Palisades.** See **Palisade.**

**Turning-Evil, in Cattle,** a disease that causes them frequently to turn round in the same place. It is also called the **flurdy,** which see. See **Turn in the Head.**

The common remedy, recommended by Mr. Markham, is to throw the beast down, and bind him; then to open his skull, and take out a little bladder, filled with water and blood, which usually lies near the membrane of the brain, and then gradually heal the wound. Boyle's Works, abr. vol. i. p. 87.

**Turning to Red, in Agriculture,** a term used in tillage to signify stripping, ribbling, baulkining, and combing, according to the manner in which it is performed. It is the leaving of a narrow strip of ground whole, on which the furrow-fluice is turned. It is much used in Devonshire, Cornwall, and some other districts.

**Turning to Windward,** in Sea Language, denotes that operation in falling, in which a ship endeavours to make a progress against the direction of the wind, by a compound course, inclined to the place of her destination. This method of navigation is otherwise called **plying.** See **Tacking.**

**TURNIP, or Turpen,** in Agriculture, a most useful and nutritious root-rooted plant, of which there are many different sorts in cultivation by the farmer. It has been long known in this country, but only more lately introduced as a field-crop, probably from Holland, or the Low Countries. It is from a more general introduction of this root into field-husbandry, that much improvement and advantage have been produced, not only in the management of arable land, but in the general system of feeding and supporting different kinds of live-stock. The culture of this root has, indeed, contributed much towards exploding the expensive and wasteful practice of naked fallowing, as well as to cleanse and ameliorate the soil, and render it more abundantly productive.

The turnip belongs to the genus **brassica,** and is well-known by its having a round, or rather long, fleshy, eatable root, that varies considerably in these respects, as well as size and colour, in different sorts, under the state of cultivation. The leaves proceeding from the top of the root in
the middle part are large, and mostly of a full green colour, being ragged on the edges. The stem arises from the midst of thefe in the second season of the growth of the plant, to the height of four feet, or more, producing a yellow flower, with cylindrical pods of some length, filled with small purple, or reddish-brown coloured seeds. See Brassica.

All the different sorts of this excellent plant are, for the most part, distinguished by the form or shape of the bulb or root, which appears in some measure to depend upon the diversity of soil, and the nature of the culture of the plant. But the sorts that have been laid at the disposal of as field-crops, with the greatest success and benefit in different parts of the country, are principally those two kinds; those having a round or flattened-formed root, that rests much on the surface of the land, and those in which the root is of the more long tap-rooted form, penetrating deeper into the mould with the lower part of the root, and standing higher above it with the upper portion of the bulb.

In the first, or round flat-rooted sort, there is likewise much variety in the appearances of the tops as well as the roots, though the latter are mostly a little round and flattish. They are commonly distinguished in field-culture into the red-round or purple-topped, the green-topped, the white-topped, the yellow-rooted, the black or red-rooted, the hard or flone, and the Dutch turnip.

In the latter, too, or long tap-rooted sort, there is some degree of variety in their roots. They are usually known and discriminated by the farm-cultivator under the titles of the tankard, the tap-rooted, the pudding, the oghl, the long, round, and the hardy or Russian turnip.

It may be noticed, that the different varieties of the former of these kinds of turnips, in consequence of the roots of them being formed more on the ground close to the surface, than in those of the latter kind, which often stand high, naked, and much exposed in their upper parts, above it, are better suited to the purposes of general field-culture, in fields where there is much risk of their being hurt by the effects of frosts in the more severe winter months; but that in other crops, as where they are to afford an early feed, as for suckling ewes, and in the fattening of forward sheep at an early period, the latter kind may be had recourse to as the most proper and beneficial. This is said to be the practice of some districts in the vicinity of the metropolis, where it is of importance to have forward lambs.

In different districts where this root is largely cultivated, different sorts of this plant are employed; and it is not improbable that some sorts may be more proper for some qualities of land than others, though little has yet been done in the view of deciding this point. Nor is it unadvisable to suppose, that among the many varieties of this highly valuable plant, there may not be some which, in addition to their superior hardiness, possess a greater proportion of the nutrient principle than others. It has, indeed, been stated that, in a great northern turnip district, the green-topped and white-topped are generally esteemed as more sweet and nourishing than the red-topped sort, which possesses a degree of bitterness, and is disposed soon to become flabby and bad as food: that the white-topped sort, on the better kinds of land, is probably the most proper and beneficial, as while it has the property of being hardy, it grows to a large size; and that this and one of the other or small hard sort, are the most commonly grown, and held in the greatest estimation in some of the best turnip districts still more towards the north. The latter of these sorts is, indeed, by some farmers in those districts, supposed to stand the severities of the winter season much better than most of the other sorts; but then the produce on the acre is commonly much less. And by others in more southern districts, it is thought to bulb quicker, to have a greater solidity, a finer grain, a thinner skin, and to be smoother in the crown of the bulb; consequently to be less liable to injury from wetweather and severe frosts. And that although it may not grow so quick, or so large a slice, the latter of these defects may be obviated by leaving the plants a little thicker on the ground at the time of thinning and setting them out. Indeed, both the white and green-topped sorts are also much grown and approved in all those districts, and by some highly extolled on account of the qualities just noticed, as well as their being of a large growth, and continuing longer in a state fit for use, especially the latter. The yellow-rooted or straw-coloured turnip, too, is found to be a firm-flushed and sweet-flavoured nourishing sort, but it has not yet been much cultivated, so that its properties are but imperfectly known. The red sort, which was formerly much esteemed, has now mostly given way to other sorts. And the black-rooted sort is very rarely cultivated in any district of the kingdom; nor even those of the Dutch sort, though the early kind of them might answer well for forward crops. Much might probably be done in getting good sorts, by collecting seed from such as are the most hardy, and which grow to a large size, and fowing it in continuance.

In some northern and other districts turnips are grown much in mixture, which is a bad plan, as they have different growths, and of course rife unequally. And in the southern ones, the white globe prevails much in some instances; and the green round sort is found to stand well, and be larger as well as more certain in the produce.

The turnip is a sort of crop which is grown after many other different kinds, as thofe of a wheat flubbe, a pea ley, a tare, potatoe, or any other similar kind of crop, as well as after the process of paring and burning the layers of old grass-lands. It is the practice too, in some districts of this sort, to have two turnip crops in succession, as the means of cleaning the land more effectually, which has been found to answer greatly in the barley or other crops that may be grown after them.

The foils which are the most proper for the growth of this sort of crop, are all those of the more light, friable, loamy, medium sandy, and other kinds, which have a sufficient depth; but it may often be raised with success and advantage on many other sorts, which have the surface-mouldy parts sufficiently fine, without there being too much moisture below, as those of the thin gravelly, loofe chalky, and many other sorts and qualities; even on the loamy clays, in some fields, when properly managed in their tillage preparations, and other ways.

A late practical writer has well remarked, that from the successe of the culture of this useful crop, on lands that differ greatly in their nature and qualities, it is plain that the plant admits of more latitude in respect to soil than many other sorts; though an opinion appears to have been too general among the cultivators of it, that it is only capable of being had recourse to with advantage, on such as are of a light, mellow, and open texture and quality. It is suggested too, that this has probably had considerable influence in preventing the culture of the turnip from becoming so general as, from its great utility and importance, it ought at present to have been. But though the turnip may be grown with success and benefit on soils that vary considerably in their natural friabilities and compositions, it is consistently necessary, to the perfect growth of such crops, that at least the more superficial parts of the soil, or the beds of earth in which they grow, should be in as fine a reduced powdery condition as possible, as more is found to depend
TURNIP.

depend on this, than even on the nature or qualities of the soil.

In the view of bringing land into a state of suitable preparation for this fort of crop, much breaking down and reduction of its parts are, of course, requisite. This fort of breaking and pulverization is supposed to be necessary and beneficial in many different ways, as by rendering the land more penetrable to the roots of the plants, by promoting the growth of the small weeds more fully on the surface, and thereby making them capable of being more perfectly eradicated, and the young turnip plants, of course, be less endangered by them; while, at the same time, a more fine and mellow bed of mouldly earth is provided for the reception of the turnip-feed, and its vegetation and growth rendered more quick and strong in consequence of the more equal diffusion of moisture that must take place among the parts of the soil. Without such a state of mould in the soil being produced, it is found to be in vain to expect good crops of this fort. In order to provide this state of preparation in the soil, it is the practice in some of those districts where turnip husbandry is carried on in the most complete and successful manner, when the seed is to be put in on a fallow, to have recourse to three, four, and frequently five ploughings or firrings of the land, having the cloddy parts of it well broken down, between the times, by harrowing in different directions, and the occasional use of the roller or other such means, as by these modes almost every particle of the soil becomes divided, and exposed completely to the influence and action of the atmosphere, and perfectly aerated and faturated with moisture. In these cases, some advise that the first operation should be performed towards the close of the year in a shallow manner; so merely to take off the rough surface; the land may then remain in this situation until just before the beginning of the spring, when it should be well broken and reduced by harrowing, and then cross-ploughed to the full depth. When the land is weedy, it should be again broken down by the harrow in the course of a little time; but when clean, it is better to remain in its rough state. In this condition it may then be left until the spring be a little advanced, when it should have another ploughing to the full depth, and where the season is dry, and the soil of the more heavy or stiff kind, be immediately after harrowed, but where it is light, this may be deferred for a week or two. By repeating these operations sufficiently, the soil is most soon brought into a fine clean state of preparation for the crop.

Others, however, think the first ploughing should be deep, and the after ones and harrowings be continued to a later period, but at the same time, suggest that they must, in general, be much regulated by the nature of the soil, the circumstances of the season, and the convenience of the cultivator.

In preparing fallows, as well as other lands for turnip crops, some, in different places, besides these means, make great use of scoriators and scabol tors, and find them particularly beneficial in foul slates of them.

Where the seed of this fort of crop is, however, to be put in after corn, early pea, tares, or other such crops, the preparation of the land is seldom carried to such an extent of ploughings and other operations. Much fewer are commonly thought sufficient for the purpose, as two, or three at most.

In preparing for this crop, after the surfaces of coarse pasture or other grass-lands that have been long in that state, old fallow lands, or downs, have been taken off and reduced by means of paring and burning them, the practice is to have recourse to once ploughing over the lands in a light manner, the ashes having been previously spread out equally on the surface. In this way the most advantage is afforded to the turnip crops, and they have been well produced by it.

There are some other local practices of preparing for turnip crops, but they need not be noticed in this place, as being only in little use in certain cafes.

In the application of manure in the preparing of land for this crop, in the first of these ways, and where it is of the calcareous kind, such as lime, marl, or other similar forts, it may be the best mode to make use of it after the second or third ploughing, especially in the former of these kinds, in the proportion of from one and a half to about three chaldrons, or thirty-two bushels; and in that of the latter, from eight to ten or fifteen ordinary cart-loads to the acre, as the circumstances and nature of the land may be; as in this manner such matters may become the most perfectly blended and incorporated with the mould of the soil. Each of these sorts of sublimates has been found highly useful, in this way, in several different districts of the kingdom.

It is, however, clear, from the success of different cultivators of this fort of crop, that sublimates of the dung-kinds, where they can be fully supplied, and used in the preparation of the land, or other ways, are the most suited to the growth of the root. And that for such soils as possess a proper degree of lightness, and are in a fine mellow state of mould, those which are in the more reduced, or rotten short condition, may be the most suitable, as they are capable of being the most intimately mixed and incorporated with them; but that where they are more close and heavy, the longer and less reduced kinds may be more proper and beneficial, as they will not only tend to preserve these soils in a more open and loose state, but by their more gradual decay in them, render the earth more friable and mellow. Some, however, think them best applied in the medium state between these extremes. This fort of manure, when used in preparing land in this intention, should vary, in some measure, not only as the nature of the soil may be, but according to the manner in which the crop may be cultivated in general, however, it should be put into the soil as nearly as possible to the period at which the seed is sown; as, in this case, in consequence of the new fermentation that necessarily takes place in the soil, the crop receives the most benefit from it. When, therefore, the crop is to be put in, in the broad-cast manner, the dung may be spread out equally over the land, and be turned in with the seed-furrow; though some advise it to be lightly turned in by the ploughing that precedes the seed-earth, and to be well intermixed with the mould of the soil, by harrowing immediately before that earth be given. The former would appear, however, to be the better practice, especially when the manure is in a sufficiently reduced state, as the plants will have the more full advantage of it. The quantity must necessarily depend in a great measure upon the different circumstances of the soil, and the richness of the dumpy material; but less than from ten to twelve good three-horse cart-loads can seldom be made use of with advantage on the acre.

Where earthy and other matters, in mixture with dung, are had recourse to in this way, after being well prepared, as is sometimes the case, the proportion should mostly be considerably larger.

In cafes where the crops are put in, in the ridge or drill manner, as the manure is wholly confined to the middle parts of the ridged-up earth, and does not occupy all the superficial portions of the land, a somewhat less quantity of it may answer the purpose; though a full and rather liberal
allowance should always be made, as the safety and success of the crops depend much upon the rapidity and strength with which the young plants are at first pushed forward by such means.

In whatever way this sort of manure is made use of in this preparation, it should constantly be applied in an even manner, and be turned into the soil as soon as possible afterwards; as where this is not the case, great loss must often be sustained by the dissipation of the more liquid parts of it.

There are many different practices, in the preparation and application of this kind of manure, recurric to in different districts, in using it for the purpose of raising turnip crops, as may be seen by consulting the Corrected Agricultural Report of the County of Norfolk; and different kinds of it are sometimes preferred by cultivators, as that from fattening beasts, hogs, and the sheep-fold. But good clean dung of any sort is capable of anwering the purpose.

The dungs of rabbits, poultry, and pigeons are occasionally used with success in the raising of crops of this sort, after being rendered dry, and dispersed over the surface of the land in an equal manner. They are mostly used for this purpose in the quantities of from about twenty to thirty bushels to the acre, just before the time of sowing the seed. And as they require to be put into the soil to only a foot depth, harrowing may, in many cases, be sufficient for the purpose, or a very light and shallow ploughing. Rape-cake has long been employed as a manure in some districts, in preparing for turnips, as that of Norfolk, by having it turned over the land in a coarsely reduced state, five or six weeks before the time at which the seed is to be put into the soil, in the quantity of about a ton to three or four acres, and leaving it so, or turning it in very lightly at the period of sowing. But it is considered a great improvement by some, and practised to much extent by Mr. Coke, of the above district, to have it ground by proper mills into a perfect state of powder; and applied at the same time with the seed over it, in the drills or small openings in the land made for the purpose. It is effected by a contrivance of the drill kind, that contains alternate divisions, with small and large cups for delivering the seed as well as the cake into the same drills. The stream of powdered cake is thus rendered constant and regular, the proper cups and funnels being capable of ready application. In this way, it is not necessary to have the cake applied before hand, and a ton is sufficient for five acres, by which there is a considerable saving in labour as well as the material. It is said to answer perfectly in the practice, though some dislike it.

Different other sorts of manures that can be reduced into a powdery state may likewise be employed in this manner, in the growth of this crop, with great economy and advantage in many cases. Malt-duft or combs too, might be made use of in the same way with advantage, though it is commonly applied over the surface in the proportion of about twenty sacks, of three bushels each, to the acre.

Sheep-folding, in some districts, is used as a means of providing manure for the growth of turnips, from the time of first ploughing up the land, to that at which the feed-earth is given. From the treading and comminuting of the soil so much in these cases, it may however be believed only to fold during dry weather, and always to plough over the land in a light manner as soon after the sheep are removed as possible.

The quantity of seed which is necessary must be different in different cases, as a great deal must constantly depend on the nature and quality of the soil, the period of sowing, and the manner and circumstances under which it is put into the ground. In some good foiled districts in the southern parts of the country, where the turnip culture in the broad-cast method is carried on to a considerable extent, the quantity made use of is commonly from about one pound to one pound and an half; but on those of a more light, and those of the sandy kinds, a pound is mostly found quite sufficient; while on some more heavy turnip soils, nearly two pounds are employed. On the calcareous and loamy chalky soils too, a large quantity of seed is mostly necessary. It is indeed, in common, a good practice in fowing for turnips, not to be too sparing of seed, as the unnecessary plants are readily capable of being removed by the first hoeings and thinnings of the crops.

In the culture of the crops in the ridge or drill method, as is commonly practised in some northern districts, in consequence of the feed being deposited in a more regular and exact manner, and the whole of the land not being occupied by plants, a somewhat less quantity of seed may be sufficient.

As the success in the growth of turnip crops has been found to depend greatly on the quick early sprotting of the feed, and the young plants being expeditiously pulled into broad leaf, it may be useful to have the feed deeped a little in water, or some other liquid, before it is put into the ground, especially in dry seasons; but it must become externally dry before it be fown in all cases.

Soaking the seed in strong-scented oils, and drying it by means of brimstone, have likewise been practised in the view of preventing the destruction of the crops, but probably with but little success.

The time which is most proper for sowing crops of this sort, must be principally regulated by the intentions of the farmer in respect to the dispoal and use of them; but for the general more early consumption of them, the most proper season for putting them in may be about the beginning of the month of June; but where it is intended that the crops should ferve as food for stock in the more early spring months, or at late periods, the fowing should take place proportionately sooner or later. Indeed, where the root is grown on a large scale, it may often be of great utility and advantage, as well as very convenient, to have the times of sowing still more conveniently varied; as the crops by such means not only come more suitably in fucception to the hoe, but are likewise ready for the purpose of consumption by different sorts of live-flock, at the different periods when they may be most wanted.

In cafes where the practice of lamb-fuckling is had recourse to for getting them ready soon, it is essential to have crops of turnips as early as possible, in which intention the seed is to be put into the soil often a month sooner than the above period; such land being set aside for the purpose as is well enriched with manure, in a fine state of tilth, and perfectly free from weeds.

In common, however, early sown crops of turnips are not only less sweet and nutritious for stock, but more exposed to injury from mildew and other caufes of the same kind, than those which are sown later in the season; though this may be the case, the sowings in no circumstances should be deferred for long as that the plants cannot have time to fix themselves fully in the soil, and cover it well before their growth is checked and restrained by the coldness of the approaching autumn and winter seasons, as in such cases the crops never answer well for the farmer.

In regard to the methods of fowing or putting this sort of crop into the ground, they vary in different districts, but are chiefly of two different kinds, the broad-cast, and the ridge
ridge or drill. In the great turnip district of Norfolk, and
most of the southern parts of the country, it is the most
prevailing practice to sow this sort of crop in the broad-cast
manner on the level surface: while in the large turnip
districts of Northumberland and Berwickshire, where this kind
of husbandry has undergone considerable improvement, and
in most of the more northern parts of the isle, it is more
common to have recourse to the drill mode, depositing the
seed in rows, either in hollows or ridges mostly raked by
one hand of the plough, or in drills on the level surface; at
the distances of from twenty-four to thirty inches in the
former cafe, as the circumstances of the land and the inte-
tentions of the cultivator may be, and from ten to twelve
or thirteen inches in the latter.

Thefe different general methods may each of them pro-
ably have recourse to with propriety, success, and benefi-
cient under different circumstances and qualities of the foil. As
on the light, mellow earthy, deep sandy, gravelly, and other
similar forts of land, which are apt to part with their
moiſture too quickly, and consequently liable to become too
dry and parched for the healthy perfect growth of the
turnip, it may be the beet and most successful practice to
sow in the broad-cast or drill mode on the plain or level sur-
face, as by such means, the moiſture which is neceffary for
the crop, may be more effectually preferred in the land for
the supply of the plants. And on the contrary, where the
lands are of a somewhat more heavy quality, and not fo much
dispersed to part with their moiſture, but to retain it in a
fort of firm flat, the ridged-up drill method may be the
most suitable and advantageous, as by the mellowness and
fiinenefs of mould which it affords, and its tendency to keep
it dry and preserve the plants from being hurt by the reten-
tion of too much wetness about their roots, the growth and
feverity of the crops will be much promoted. It has a
superiority too in fome cafes in other ways; as on foils
which are rather thin in the staple, this plant, in confequence
of its long tap-root standing in need of a good depth of
mould, can seldom be grown in a perfect or beneficial man-
er, by ridging up the land considerable advantage may be
gained in providing a more suitable depth of cultivated foil
for the plants to grow in, and a better bed for putting in
the seed, as the operation has been found to more than
double the common depth of mould in fome fuch cafes.
The plants in this way grow more strongly, and befeides, by
the manure being confined to the ridges on which they
grow, are lefs exposed to the atmosphere, and not demanded
in fo large a quantity, in confequence of which more land
may be employed in raising this fort of crop; while by its
concentrated, and the feed being placed more immediately
upon it, the nourishment and means of support to the plants
may be more fully and effectually supplied, and a larger
produce, of course, be afforded. This mode of sowing may
be beneficial too in affording the means of more easily and
readily getting up the crops, as food for flock in particu-
larly levere feafons, when eaten off very early in the winter
months. It is of importance also in feveral other cir-
cumstances, as the hoeing, working, and cleaning of the land
between the rows of the plants can be easier, better, and
more perfectly executed, lefs expert perfons can be em-
ployed in much of the work, and from the earth or mould
being laid up to the plants by the ufe of the plough or
fome tool of that kind, the roots of the crops are better
protected and preferved from the effects of severe frosts and
other caufes of injury. They can be railed in this way like-
wise on land that has been lefs prepared and is lefs dry, as the
tops of the ridges are preferred by it in a proper flate, and
the crops are mostly more abundant in this manner of sowing.

Different objections have, however, been made by fome
to the ridged or railed drill method of putting in the feed;
but the principal of thofe that appear to have any fort of
weight or importance are, that in confequence of the roots
of the crops, in fuch cafes, being more elevated or flanding
higher, they are, on account of being too much expofed, lefs
capable of flanding the severity of the winter feaion; and
that larger spaces or distances are allowed than are neceffary
for the roots to attain a proper size in, confequently that
the quantity of produce on the acre will not be fo great.
Notwithstanding the latter fuppoftion, it is probable, how-
ever, that from the nourifhment or food of the plants being
fo greatly inereafed, and the growth of the crops thereby
rendered fo much more healthy and ftrong, the amount of
the produce must be inereafed rather than diminished.
Diftinguifh and calculations would indeed foom to
defcribe this to be the cafe, and that even a greater weight of
turnip is railed on wide intervaleed ridges than thofe that
are narrow within certain limits.

It has been contended too, in oppofition to the railed
mode of fowing, that there is difficulty in refotting the land
to the level flate again, and that the ground in the intervals
becomes unproductive in confequence of the want of
manure; but by forming the ridges in a fuitable and proper
manner, according as the nature of the foil may be, all
these inconveniences may readily be removed. In this
intention, it has been advised to form the ridges in diagonal
and other directions over the fields, keeping the lands dry.

It is further objected to the railed practice of fowing,
that in lands of the more heavy turnip kinds, which have
little intergrality of surface for taking away moifure when
in excess, though larger crops of this root may often be
produced, the grounds are fo much injured by being poached
in getting them off, that the crops of grain or other kinds
which succeed them, are leffened in a far larger proportion
than is compensated by the greater value of the turnips.
In fuch cafes and circumstances, it is advised, as more ben-
eficial, to form the land into large ridges, fo convex as to
throw the wetness quickly into the furrows, as about fifteen
feet in width, that a cart may be eafily paffed along them
without prefling the earth in and obstructing the furrows
on the sides, the feed, where the land is difpofed to throw
up weeds of the annual kind, being fown in the drill man-
er on the surfaces without being railed, as by that means
the work of hoeing may be rendered more eafy and convenient;
but where this is not the cafe, and where the feed is put in
at a late period, or the land much infetted with the grub, it
may be preferable to have recourse to the broad-cast mode
of fowing, as being more certain, from the plants being left fo
much clofer to each other at the firft fowings, as to admit of
thinning out and removing the bad and unhealthy ones in
the succeeding operations of the fame fort. Befeides, they are
advice to have the advantage of growing more strongly,
from the fielter being more complete, and from the ground
being lefs furred about them in their early growth, before
their tap-roots are sufficiently fixed in the foil to support
them perfectly.

It would, however, appear from the fuccefs which has
attended the fowing and raling this fort of crop in the
ridged-up or other drill mode in different districts, and from
the greater facility and cheapnefs of performing the neceffary
after-culture, that it is, in many infances, the moft ben-
eficial manner of fowing; but that the nature of the ridges
or drills, and the distance of the rows, muft often require to
be varied according to the quality of the foil, and many
other circumstances. See a paper in the fend volune of
"Communications to the Board of Agriculture," for the
com-
comparative benefits of the drill and broad-caft methods of
fowing, as ascertained by experiment.

In explaining the practices which are mostly made use of
in putting in turnip crops in the above two different
methods, it may be observed, that where the former or
broad-caft manner of fowing is in use, which may be proper
and advantageous in some cases, as has been just shewn, it is
of much consequence to their success, that the more super-
fi ci al parts of the land be brought into as moidly and fine
even condition as possible previously to the putting in of the
feed, and that in fowing, the feed be befed over the sur-
face of it in as perfectly even and exact a manner as may be,
as soon as it can be done after the ground has been made
ready, as upon these circumstances being well attended to,
the goodness and abundance of the crops in a great measure
depend. An expert feedman is required for performing
this sort of work, but as it can seldom be done by the hand
in a suitable manner by persons who have not been long in
the habit of putting in small feeds in this way, a fort of box
or trough has been invented and constructed for the pur-
pofe, which is in frequent use; and when proper care is taken
to prevent the perforations of it from becoming obstructed by
two or more feeds being fastened in them, it is of great utility
dispersing the feed in an uniform and regular manner over
the surface of the land. After this has been properly
effect ed, the feed is mostly covered in, in a shallow manner,
by means of harrowing, a light short-tined harrow being
u ed for the purpose, as from the turnip plant forming its
bulb in some measure above the surface of the ground, it
should not probably be put in to too great a depth in the
foil. Some advice the pafling of the tool twice over the
land only in the fame direction, in the ffirst going slowly,
and in the latter more quickly, in order to give a neat
finish and finer furface; the ridges having been laid out to
the breadth of from four to ten yards, as the land may be
inclined to be more moist or dry. This is the Norfolk
practice in some meafeure, and found to be extremely benefi-
cial in many cafes of broad-caft fowing for this crop.

In the drill method of fowing turnips, the land, after
being prepared in the manner already defcribed, is either
formed into little ridges by the plough, and the feed put in,
in drills upon them, or there are ftruck in the level surface
as noticed above; but the firft is by far the moft common.
In the great turnip-drilled district of Berwickshire, the
little ridges or drills, in cafes where the ground is not well
reduced, but remains in rather a rough and cloddy flate,
are, it is faid, formed with the common fwing plough, drawn
by two horses, which lays together three or four small
rinds or furrow-slaces for one fuch ridge or drill. But
that the moft common and expeditious method of laying up
these ridges or drills is by a double mould-boarded plough,
which has the boards hung on the fheat with hinges, and
which can be fet wider or narrower, as may be necessary.
This too is drawn by two horses abreast, and forms two
fides of the little ridges or drills at the fame time; the
width of fuch ridges or drills being commonly, as has been
feen, from twenty-feven to thirty inches. In cafes where
the large ridges or lands are not much rounded, the little ridges
or drills for fowing on are not laid in exactly the furface of
them, which is mostly parallel to one or other of the fides of
the fields, but are angled a little, for the purpose of
having the manure better mixed with the foil, when it
comes to be ploughed up into ordinary fixed ridges or lands
for other crops, after the turnips have been caff or taken
off the ground, as already fuggesfed.

But in another district, where this mode of fowing turnips
is largely practiced, in the extensive cultivation of the root
by fome, the manner of performing the work is, after the
land has been prepared and made very fine, as directed
above, for the ploughman to set up three ficks or poles in
a right line where it is thought most proper to begin, and
by having the horses yoked double, and driven by himself
with cords, these poles are feen between the horses, and by
keeping the plough to bear always upon the poles, the
firt furrow is drawn as ftraight as possible. In returning,
the far-fide horse is kept in the new-mad furrow, and the
plough at fuch a distance as to form a one-bout ridge or
drill in a complete manner, which has somewhat this ap-
pearance Δ: by proceeding in this manner over the whole
the land, when finifhed, displays the forms of alternate
little ridges and furrows in this way ΔΔΔ Δ; the difiances
of which are mostly as flated above, as smaller ones do not
admit of ploughing between the little ridges or drills.
However, in the practice of the former of these diftricts,
the land when ridged up or formed into narrow raifed divi-
sions, the ridges have a fels sharp form: thus ΔΔΔ ΔΔΔ ΔΔΔ.

In the latter of these diftricts, or that of Northumber-
land, the next proceedes are thofe of applying and turning
in the dun or other manure into the little ridges or drills,
which is effected in this way: a cart goes down every third
interval between the small ridges or drills, and lays fuch
matters in small heaps in it; when labourers, as women and
children, are ready, and with small three-pronged forks
place them out even and fmall in the bottom of the three furrows of
the ridges or drills; that is, in the one where the matters are
dropped, and in thofe on each fide of it. This being done,
the ploughman fplits the one-bout ridges, and covers up the
manure exactly in the middles of new-formed ridges of the
fame fort: but before the fowing can take place, the tops
of the ridges require to be flattened, which is done by means of
a small roller, four feet eight inches in length, and nine
inches in diameter, which flattens two ridges at once. On
the tops, and exactly in the middles of these flattened
ridges, the feed is deposited in small openings, made by one
or more drill-fowing implements tied to the roller by a rope
of fix or seven feet in length, at which distance the roller is
followed, the fowing-drill or tools being guided by a man, the
work when finifhed appearing in this form Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ;
the letter s shewing the place of the feed, and of that of the
fubfiance ued as manure. The ridging-up the land, and
covering in the manure, are done in the fame way as in the
first diftrict, by ploughs of the fame kind.

And in the mode of this diftrict, or Berwickshire, the
work of manuring and covering it in go hand in hand, and
fucced each other as fhort as poifible; the matters thus ued
being laid in heaps in the furrows of the different ridges or
drills, from the third to the sixth, at the distance of from
eight to ten feet, and immediately put carefuilly in along
the furrows of them, when a few being completed from end
to end, the double mould-boarded plough is ued, as before,
to split the ridges or raided drills, and cover in the manure,
which it does at one bout, leaving the ridge-tops immediately
above the manure put in, rather high. These are sometimes
here, in some cafes and circumftances, a little levelled down
before fowing, in a fort of sharp convex manner, by a light
harrow run once or twice over them. But the moft usual
mode of flattening them is by the light wooden roller, as
above, to which the drill or fowing-plough is attached,
in the manner already feen. Sometimes, however, instead
of the roller, a kind of flcd, made of wood or iron, is had
recourse to in some places, for flattening the tops of one or
more
more bow ridge; but the light rolling mode is much the neatest, most convenient, and ready manner of executing the work.

There are different other modes and practices of performing the business of putting in the feed, in the ridged-up and drill manners made use of in different places; but as they are not common, or of much practical importance, they need not be mentioned here.

In putting in the feed of turnip crops in this way, a great number of different kinds of drill-sowing implements and contrivances are made use of; but tho' wrought by horses, and which are so formed and attached in their different parts, as to perform all or most of the several operations of the process at the same time, are, in general, the most proper and convenient for the purpose. Whatever contrivance of this nature is, however, employed, it is constantly necessary to take care that the feed be regularly delivered and put into the soil; as from the smallness of the perforations in the revolving cylinders of most of them, the feeds are liable to be obstructed in passing, and the regularity of the delivery and sowing thereby prevented.

Every district has mostly its favourite drill-sowing implement for this purpose. In the frit of the above, they, for the most part, make use of a tool of this fort for sowing turnips, which has a cylinder or small barrel of white iron or copper, and that is mounted upon an axle with two wheels. The barrel is perforated with holes at equal distances, and as it turns round with the wheels, the feed falls equally out, and exactly in a straight line. This cylinder and wheels are fixed to a light frame-work, which has two flits, and is kept on the top of the ride or drill by them, by a man or boy, who walks behind, as in managing a common plough. Before the cylinder there is fastened to the frame-work a fort of coulter, which makes a kind of small rut-like opening for the feed, and behind is fixed a rake with two or three teeth, which mixes the feed that is dropped with the mould of the soil, and covers it; and as the horse and implement return by the next furrow or interval to the right or left, the opposite end of the roller rolls the ridge down, and compresses or flattens the top of that on which the sowing implement follows. When it is necessary to do much work at a time, two sowing tools are had recourse to, which follow the same roller, and two ridges at once, and the feed is rolled in by a second roller.

An improved tool of this kind has been invented, which flattens two ridges or drills, forms the little ruts or openings on their tops, puts in the feed, and covers it in all at the same time, by which much saving in tools and labour is made. It is a very complete implement for sowing in the raised drill or ridge method. It is made and much used in Berkshire.

Sometimes the roller used for the feed in these cases is a kind of low broad wheel, which is attached to the sowing tool, and rolls only on the track or rut where the feed is put in, which may answer where the work is on a small scale.

On fine land, fully prepared with reduced dungy matter, and on which it is considered unnecessary to horse-hoe, a sowing implement of this fort is sometimes used, which is attached to the common sowing-plough; and one tool following the other, the feed is sown in rows, at a regulated distance and depth. This tool and mode of sowing answer well in such cafes, and are much employed in some parts of Yorkshire.

In cafes where powdery substanies of the rape-cake, or other such kinds, are to be put in as manure with the turnip-feed, in this way, a sowing implement of this fort has lately been contrived and had recourse to in some of the southern turnip districts, with much utility and benefit. It sows the feed and dust in regular lines and quantities, on two ridges at the same time, the horse passing in the furrow or interval between them. This is effected by having proper cups and funnels for depositing the cake in addition to the other parts, as seen above. It is a very complete and useful tool for the purpose.

Where, however, the feed is to be sown in the drill manner on the level surface, without its being raised in ridges, as is the practice in some districts, especially when formed at narrow distances, as not more than twelve or thirteen inches apart, the larger contrivances of this fort, which sow a number of rows or drills at the same time, may be the most proper and advantageous, as being more quick in the work. There are many other implements of the same kind, which are useful, and suited to different cafes of sowing in this way. See Turnip-Drill.

In whatever manner turnip-feed is put into the ground, experience has shewn that it is of much consequence to have it done in such a way, and under such circumstances, as that the germination and early growth of it may be in as ready a manner as possible, as upon this a great deal in the goodnes of the crops depends, as has been already seen. It has been supposed by some that the seed, in order to secure these effects in the most certain manner, should be put into the soil to the depth of three or more inches; and that the uniformity of the drill method of sowing partly arises from the feed being placed to a greater depth, and growing more rapidly, on account of having more moisture, so as to have the plants become sooner out of danger from insects, or other such causes of destruction; while others think, from these circumstances, that it should be covered in only in a light manner.

A late able practical writer, however, suggests, that as air is necessary as well as moisture to the vegetation of seeds when placed in the ground, it would seem probable that the quick sprouting and growth of such crops may be the belt and most efficiently secured, by only putting them into a middling depth, and according to the particular nature of the land, and state of the feafon may be, as from an inch and a half to about two inches, as the soil or seafon may be inclined to be wet or the contrary. In this way, it is believed, the inconveniences arising from the feed being too much parched and dried by its being exposed near the surface, and from the want of the action of the air on account of its too great depth, may be equally avoided. As crops of this fort are, for the most part, put into the earth during the hotter months, there is another circumstance that may be of equal consequence, it is supposed, in promoting the quick sprouting and growth of the young plants; which is, that the seed, especially in such hot seafons, be well imbued with moisture by soaking it, and consequently with the oxygen principle of the air, as already suggested, before it is committed to the ground; as by such means, there will be less required to be drawn from the mould of the soil which surrounds the feed, and the process of vegetation almost immediately takes place. Sir George Staunton, in his account of the "Embassy to China," as well as Mr. Gillet, in the "Bath Papers," have likewise ascribed the preservation of turnip-crops in that country as well as this chiefly to this practice; and by it good crops of this fort may often be produced, where they would otherwise almoit wholly fail. And the correctness of the practice and principles on which it depends, is further supported by the lucceles of the general custom of putting these crops on the moist, new or fresh turned-up mould. Some interesting and useful observations and experiments on the sprouting and growth of turnip-feed, may be...
be seen in a pamphlet "On the Failure of Turnip-Crops," by the Rev. H. B. Stacey, but which we have not room to introduce here.

After-culture of the Crop.—It is of much consequence in the production of good crops of this fort, to have this part of the culture of them well performed, and at such times as are most suited for promoting the growth of the young plants, as well as preventing those of the weed kind from rising and injuring them by the shade and obstruction which they produce; as without considerable attention in these respects, the labour and expense employed in preparing the land, and putting in the crops, must, in a great measure, be thrown away, from the want of a sufficiently adequate return being afforded. This culture is constantly to be accomplished by means of the hoe, in some way or other. Where the crop has been put into the soil in the broad-cast manner, the hand-hoe only can be made use of for the purpose; but where the seed has been sown in rows by the drill, or in other ways, and a sufficient space of interval allowed, those of the horse kind may be employed, either alone, or in addition, after the plants have been properly set out in the hand manner, to suitable distances.

It is the common practice, when the plants have produced four or five leaves, or when they cover a circle of three or four inches in diameter, which most aptly happens, in favourable seasons, in the course of about a month or six weeks from the time of the seed being put in, to begin the different operations in this sort of work. In the first of which, such plants as stand too close are to be struck out, to leave the others at a suitable distance, according as the circumstances of the season, the nature of the soil, the period of sowing, and the use to which the crop is to be applied, may be. When the season is hot and dry, the striking out of the plants in the first hoeings should not, however, be such as to leave them at too great a distance; as by keeping the remaining plants pretty close together, the moisture may be better preserved in the land, and the crop rendered more secure; but in rich soils, when early sown, and when intended to be consumed by flock at an early period, a greater striking out of plants at first may be advantageous. In the practice of some, the most usual custom is to leave the plants in the first hoeings at the distance of from six to eight inches from each other, but others prefer a still greater distance. In the second hoeing, which should be performed in the course of about a fortnight, or three weeks, from the first, according as there may be a necessity, the plants that are to remain for a crop may be left at the distances of from eight or nine to twelve or more inches in the broad-cast practice, and at those of from nine or ten to fifteen, or a greater number, in the rows where the drill method is employed.

In these second hoeings, the mould between the plants should always be well stirred, in order that it may be rendered perfectly mellow and well aerated, and any weeds that may have arisen be effectually destroyed. The future hoeings that may be necessary in crops of this sort are to be regulated by the particular circumstances of the season; but the mould should never be allowed to become too stiff and compact about the roots of the plants, or any weeds be suffered to interfere with them.

It is the practice in some places, especially with the broad-cast crops, to pass a light harrow over the land once in a place, as soon as the plants are sufficiently strong, in order to render the first hoeing more effectual; and even in particular cases, where they push forward rapidly, it is made use of a second time in the contrary direction. In performing the work, however, great care is necessary, particularly when the plants are thin upon the ground, as otherwise too many of them may be dragged up, and the crop be much injured from the want of a sufficient plant.

In the ridged crops in the latter of the above drilled turnip districts, it is the practice, when the plants have got four leaves, to begin to hoe, leaving the plants at only eight or nine inches distance in the rows; and as they have so much room sideways, or from row to row, the hoers go in that manner and pull out the surplus plants, weeds, and other matters into the furrow or hollow space between ridge and ridge, and the turnip plants are left as regular as if they had been planted out with the greatest care and exactness, the work being performed by women and children at but a trifling expense. After this, when the plants left have perfectly recovered and established themselves again in the soil, as is mostly the case in about eight or ten days, the earth is taken from the rows where the turnip plants stand, by a light plough contrived for the purpose, and turned upon the pulled and struck-out plants and weeds left by the hand-hoers, in the furrows or intervals of the ridges. And when they have once more recovered themselves from this part of the work, and are become again in a vigorous state, or when other circumstances render it necessary; the mould, which was in the former process turned from the turnip rows, is now divided and laid out equally to the different rows by the same tool, or a similar one with a double mould-board. By these means, where the land is clean and free from weeds, the work is completed; but when the contrary is the case, additional hoeings and ploughings are given, according as the state and other circumstances of the land may be.

But in the former of these districts, where the horse as well as the hand methods are had recourse to, they proceed in a different manner. In the former or horse mode, when the turnip plants are from one to three or four inches high, or when weeds begin to appear, a small light common plough of the swinging kind, drawn by one horse, goes along one side of the ridge or drill, and turns off the earth from the young plants, and returns on the other side, doing the same, leaving the plants standing on sharp ridges. But sometimes, instead of this plough, the work of turning the earth off from the different sides of the plants on the ridges is done by a tool of the same nature, mounted with two sharp coulters, which cut or pare from both sides at once, and which on smooth fine land performs the work equally well and much more expeditiously. It is indeed an excellent tool for the purpose, when properly formed and made use of in the work.

In the latter or hand method of hoeing, which is had recourse to when two or three days after the earth is turned off from the plants, the hoers go to work, making use of a hoe of from five to eight inches in breadth, and at one stroke across the ridge, cut out the weeds and unnecessary turnip plants, and leave the crops sufficiently thinned and set out.

When the crop has been hoed and hand hoed in this manner, the field is left in that state for ten or fifteen days, and if weeds grow fast, the same work is repeated. In ordinary circumstances, the whole work of horse and hand hoeing only costs about 7s. the acre.

The turnips are now to be furrowed, or earthed up, which is done after they have been clean hoed, and are beginning to button, by having the earth lying between the rows, which was turned off as above, from both sides of the plants, again laid up to them by means of a double mould-boarded plough with one horse. The whole work is now finished, except only removing any weeds that may afterwards arise.
TURNIP.

It has been suggested by a large cultivator of this sort of crop, that these advantages may be equally well attained, and with more success and less danger and inconvenience, by means of paring one side of a ridge at a time, leaving the other to be performed some time afterwards. It is thought too, that this practice of paring one side only at a time with a fling plough, and leaving the other untouched for several days, has many important uses and some superiority. The tool, in this manner, is capable of going nearer to the plants; the drought has not so much imprefion on their growth; and the land has more benefit from the atmosphere by being flird at different times, than when the mould is directly thrown into its first bed, as in the common manner.

In this mode of proceeding, the work is reversed at times in an alternate manner, and continued as long as a passage is allowed to the plough by the firms of the turnips; and they are never set up at all.

Much advantage in the hoeing of turnip crops may often be gained by having the feed put in at different times, as by this means six labourers have been found capable of performing the work twice over more than one hundred acres, while in the contrary circumstances, a much larger number is always necessary for the purpose. See Hoeing.

In the hoeing culture of turnips, many different tools of different sorts are in use; but in the horsemethod, the work can be well and correctly performed by any light small plough. In this work, some use one which is about five inches in width at the bottom behind, and eleven at the top, which answers well for working the intervals of the drills or ridges. But in setting or earthing up the rows, one of the double mould-boarded plough is probably better, as being more expeditious and convenient. Improved tools of this sort have been contrived, with coulers that are moveable, for cleaning these crops, which by their capability of being readily set to different distances, so as to suit the different widths of the rows, not only perform the work of paring of and removing the earth from the different sides of rows at one operation, but which, by having their earth-boards so attached, as to be set differently as to width, effect the work of moulding up the plants. In managing the buffetings by this tool, there is evidently not only an advantage in double the quantity of work being performed, but in the different operations and processes of it being effected in a more correct manner, such as to stirm the mould in the intervals of the ridges or drills, and the application of it to the slims of the young plants on or in them. For these purposes, the tool of this sort, which has lately been invented by Mr. Waitall, may also be found very useful in different cafes. See Turnip-Hoe.

In whatever way the work may be performed, or whatever tool may be employed for the purpose, it will always be of great utility to have the earth and mould well loofened near to the roots of the plants, when they are in life in any way, and to have all weeds well cleared out from about them.

Dangers to which exposed.—Turnip crops are liable to danger from different causes during the more early stages of the growth of the plants, but the principal of them are those of the attacks of the fly, the flug, and the black caterpillar.

The fly chiefly preys upon the sweet tender feed-leaves of the young plants, and its presence is rendered sufficiently evident by its leaving many little brown spots on them, and by its eating away their flincy green parts down to the fibres of the leaves. It is said to increase in size, and the number to become larger, until the plants be wholly destroyed. It is supposed by some, that from these insect enemies, being extremely numerous on such leaves of turnip plants, and not eating, but, as it were, fucking their sap or juice through long proboscis or organs, that serve to attach them to the leaves in somewhat the manner of leeches, they may, in some measure, be the cause of the very slow progress that is sometimes made in such plants to put in rough leaf.

The ravages of the flug are readily ascertained by looking to the edges of the leaves, as it begins first to feed upon them, gradually afterwards proceeding from one part of them to another, until each is more or less consumed, sometimes exhibiting in the whole of the crop a partially eaten state. In many cases, almost the whole of the plants is destroyed.

The depredations of the black caterpillar mostly take place after the crops are in a more advanced state of growth, and the plants have formed considerable tops, and are in what is usually termed rough leaf; the green parts of the leaves in such cates being eaten through and destroyed, consequently the growth of the plants greatly retarded.

A great many different practices have been proposed and had recourse to at different times, for guarding against the destruction produced in these ways, but hitherto probably without any great success in effectually preventing it. In this intention, the blending of new and old turnip-feed together, or such as has been moistened, and such as is dry, and using them as feed for raising the crops, has been advised by some, as by this means the plants, as crops, coming up at different times, may be less in danger of being wholly destroyed, or may escape in sufficient quantity for the purpose, especially as such insects are well known to frequently make their attacks suddenly in large numbers, destroying the plants as they rise, and as suddenly disappearing again, leaving those that come a few days afterwards untouched.

On the supposition that other sorts of plants are more desirable and liable to be fed upon by this destructive insect than that of the turnip, the old practice of mixing and throwing other kinds of feeds with turnip-feed, as those of the radish and some other sorts, has lately been revived, and much extolled by different persons, but probably the method is extremely uncertain, as it cannot be successful, except when the different kinds of plants rise pretty exactly at the same time, which, from the great difference in the vegetative powers of different feeds, will rarely be the case. Any use that can be gained in this way, must probably be by employing the seeds of such preferred plants, as are rather more quick in their sprouting and growth than those of the turnip, as, where this is not the case, the turnip plants may often be destroyed before the others are in a state to be fed upon. The deftroying of the leaves of turnip crops over with caustic lime in the state of fine powder has been tried, and found useful in saving them in some cases. The same substance, as well as those of vegetable ashes and foot in their reduced states, when used by being thrown over the crops by the hand in pretty large quantities, have likewise occasionally been used with benefit against this insect as well as the flug. The sprinkling of tobacco-water, either finely, or in mixture with soap-fuds and urine by proper means upon the plants and land, has been found to destroy the flugs in a ready manner and to prevent their increase. Heavy night-rolling has long been practiced with supposed successes against both the fly and the flug. And the practice of treading with sheep, by keeping them in constant motion on lands cropped with turnips, as well as that of sowing barley-chaff over them, has often been thought
thought useful against the latter. This last too, as well as
the tobacco mixture, has been tried with benefit against the
black caterpillar, a bulb-harrow being previously passed
over the crop to dislodge the insects. The barley-chaff is
to be applied over the crop on their first appearance.

A great variety of other means has been proposed in
these intentions, but probably with no very great success.
See Black-Ganker, Slug, and Turnip-Fly, Prevention of.

In turnip crops, the roots of the plants are liable to
have a large fort of excrescence formed below the small
apples or bulbs, which, after becoming in a state of some-
thing like maturity, takes on the putrid procens, and tends
forth a most offensive smell. Plants in this condition are
mostly plentiful in their growth, and the crops indifferent.
It is said to depend on soil, and that the soils of some turn-
ip districts are subject to it until they have been clayed or
marled, which is almost a certain remedy for it. This is
the case with Norfolk; the soil is perhaps too light. The
knobs often contain a small worm in the centres of them,
which may be the cause. Taking out the affected plants
and furring the earth about the others may be useful. See
Anbury.

On some thin light soils, especially in dry seasons,
these crops are sometimes liable to be affected with a fort of
white mouldy state, which injures and checks the growth of
the young plants greatly; the chief means of removing
which, is that of proper thinning and furring the mould
about the roots of the plants. When it occurs in deeper
soils, benefit may be derived from rendering them more dry
by deeper furrowing between the ridges. See Mildew.

Turnip-plants often send off numerous stringy roots
with knobby lumps at the ends of them, which are liable
to decay and come to nothing, or what farmers term
fingers and toes, instead of bottling or forming bulbs.
This mostly happens in new or fresh land, and no mode
of preventing it has probably yet been discovered. Uti-
ility in such cases may, however, be derived from better
tillage and preparation.

Where these crops have been destroyed by the fly, or in
other ways, the same lands should not be re-own without a
flight ploughing, as is too often the practice, as there must
always be a great danger of the crops of the second fowings
in such cases. It is better either to leave the land wholly
for wheat, or to give a shallow ploughing or scuffing before
the turnip-feed is again put in. Transplanting is said to
have been employed with benefit in such crops, as the young
turnip plant is found to succeed in this way.

The seasons most favourable to crops of this fort, are
those in which the weather is warm and showery, without
much continued rain. In the autumn and winter periods,
when the changes from frosts to thaws are frequent with
rain, the roots are liable to much injury, by becoming de-
cayed and rotten; and where they fland well in them, seldom
afford the quantity of nourishment and support for flock
that may be fed on them that is usual under other circum-
stances. They are liable too to be much hurt in the winter
season by the wounds and punctures made in them by dif-
ferent forts of birds, as wood-pigeons, rooks, and fome
others; against which they should be guarded as much as
possible.

The expeuces of raising crops of this fort must necessarily
vary considerably according to the nature of the soil, the
crops which they succeed, the methods of putting them
into the ground, the situation, and many other circumstan-
ces of different kinds; but in the ridge or drill practice, they
may in many cases stand in this way.

<table>
<thead>
<tr>
<th>Expenses per Acre.</th>
<th>£</th>
<th>s.</th>
<th>d.</th>
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<tbody>
<tr>
<td>Ploughings, three at 8s.</td>
<td>-</td>
<td>-</td>
<td>1 4 0</td>
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<tr>
<td>Harrowings, ditto at 4s. 6d.</td>
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<td>0 13 6</td>
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<tr>
<td>Cleaning by hand-picking</td>
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<td>-</td>
<td>0 7 6</td>
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<tr>
<td>Making up ridges or drills</td>
<td>-</td>
<td>-</td>
<td>0 4 6</td>
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<tr>
<td>Manure and labour, half allowed</td>
<td>-</td>
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<td>2 5 0</td>
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<tr>
<td>Covering up ridges or drills</td>
<td>-</td>
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<td>0 4 6</td>
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<tr>
<td>Seed</td>
<td>-</td>
<td>-</td>
<td>0 1 8</td>
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<tr>
<td>Sowing by the drill</td>
<td>-</td>
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<td>0 1 0</td>
</tr>
<tr>
<td>Horse-hoeing twice</td>
<td>-</td>
<td>-</td>
<td>0 1 8</td>
</tr>
<tr>
<td>Hand-hoeing once</td>
<td>-</td>
<td>-</td>
<td>0 6 0</td>
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<tr>
<td>Earthing up rows</td>
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In the broad-cast practice, the expenses may mostly per-
haps be a little lower than in the above estimate.

It is in most cases the practice to sow barley after turnip
crops, but in some northern districts, wheat, and other crops
with feeds, are occasionally put in after them, when fed off
with sheep, and cleared early on one ploughing.

The quantity of produce or food for flock which is
afforded by crops of this fort, must, of course, differ much
according to the differences of season, the nature of the
soil, and the mode of culture that is pursued; but a medi-
cum crop, where the land is good and suited to the purpose,
may afford fifteen tons or more on the acre; in many cases,
however, it will be much less. The value of such crops
must depend upon many different circumstances, as their
quality and abundance, the manner in which they can be
consumed, as on the land, or in crebs and stalls, in feeding
or rearing live-flock of different sorts, and on the price of
the market for the sale of such flock; but in common, it
may be from about three or four to six or seven pounds the
acre, and in some cases considerably more, as ten and up-
wards. An acre of good turnips will fattcn a beast of
forty stone and more, or about eight sheep.

Seeding Crops.—In raising crops for feed, which is
the produce of the second year's growth of the plant, con-
derable attention is necessary in the view of producing such as
is good; as when it is collected from fuch crops as have
been fown three or four years in succession, without trans-
planting, the roots are liable to be numerous and long, and
the necks, or parts between the bulbs and leaves, coarse and
thick; and when taken from such as have been transplanted
every year, these parts are apt to become too fine, with too
great a diminution of the tap-roots. The best and most
certain way is, therefore, to take feed from turnip plants
that have been transplanted one year, and sown the next;
or transplanting once in three years is supposed by some
sufficient for preserving it good. The most suitable manner
of performing this is to select such turnips as are the hardiest,
the best of their kinds, and that have the most perfect forms,
from the common crops; and after cutting their tops off, to
transplant or remove them, in the latter end of the autumn,
to ground that has been well prepared for them, where
birds can be kept off. The feed will become ready for
gathering towards the close of the ensuing summer. Some
prefer that the feeds taken from a few roots, transplanted in
this manner, should be preferred and sown in the drill me-
thod, for the purpose of providing plants for affording feed
for the general crops, taking out all such as are weak and
improper, leaving only those that are strong, and which
have the best growth; and that when these have applied, or
formed bulbs, to again take out such as do not appear
good and perfect; as, by this means, turnip-feed may be
procured,
procured, which is not only of a more vigorous quality, but which is capable of vegetating with less moisture, and which produces stronger and more healthy plants, and, of course, better crops. The custom of transplanting the whole of the turnips in this intention is said to be too expensive, as well as injurious in some respects.

In either of these modes very good turnip-feed is capable of being raised and provided. When the feed, in these cases, is become fully ripe, the crops are mostly reaped by cutting part of the stems with the feed-pods upon them, afterwards tying them up into wads or sheaves, which, when properly dry, are carried and put into long narrow flacks, to be kept through the winter, and threshed out near the time when wanted in the spring. As in this way, however, much feed is liable to be lost and lost, on account of its readiness to escape from the pods in which it is contained, it is probably a much better practice to have it immediately threshed out, either upon a cloth in the place where it grew, or in some other more convenient spot, being then put into proper bags, and placed in a situation which is perfectly dry.

As crops of the feed kind are subject to injury and loss in many different ways, the quantity of produce must be different under different circumstances; but it may be said in common to be about twenty or twenty-four bushels on the acre. And as the price of turnip-feed is seldom less than seven or eight shillings the bushel, from the great demand for it, the culture may seem at first to be very beneficial; but from the exhausting nature of the crop, the loss in that of the grain, and the quantity of manure afterwards necessary, it is probable that turnips can only be fed to advantage in particular circumstances of soil and situation. As often as possible, however, the farmer should raise his own, as that of the flaps is in general left to be depended upon.

Application and Use of the Crop.—The turnip is a plant or root that is capable of being made use of in different intents, but the principal are those of feeding, supporting, and fattening different sorts of live-foot, in which there are great differences in the practices of different districts of the kingdom; but the most economical and beneficial modes of applying and confining it, under different circumstances of soils, situations, and animals, have probably not yet been sufficiently investigated and ascertained by those engaged in the cultivation of the root. It is stated by a practical writer, that though few trials have been made to determine the particular rate or condition in which these roots afford the greatest and most suitable proportion of nourishment for different animals that are fed on them, it would seem, from their containing a much larger quantity of rich nutritious matter in their fresh state, before being taken from the ground, than afterwards when removed and packed up, as shown by the shrinking and lots of weight that takes place, to be a more saving and useful practice, particularly where the nature and situation of the land and feaven will admit of it, as on dry lands in most of the southern parts of the country, to confume them under the former rather than the latter circumstances; but in more cold and exposed situations, as in many places in the northern districts of the kingdom, and wherever the lands are inclined to moisture or heaviness, as the roots may be greatly injured by frosts and other causes, and the animals receive much harm from the coldness of such places, while feeding on them, as well as the lands be much damaged by their treading, it may be better to eat them under the latter conditions. There are likewise other situations and circumstances, it is supposed, in which it may be particularly necessary, as well as beneficial, to make use of turnips after being drawn, removed, and slurred up, as those where it is difficult or inconvenient to raise and provide other sorts of green food for the winter and spring use of flocks.

Wherever crops of this sort are, however, taken from the land, to be consumed by animals in other places, as from their nature and large growth they must exhaust and deprive it of its fertility greatly, it will constantly be proper and necessary to return an equivalent in manure, otherwise the harm done in this way may more than equal the benefits of the crop. And in all such cases, the tap-roots and other waste parts should always be removed and left on the land, that neither soil nor manure may be taken away, by adhering to them.

In cases where the lands are properly dry, in a high state of fertility, and under good management, it may often too be an advantageous and economical practice to have a partial recourse to both the methods, by having one part of the crop drawn, removed, and eaten off the land, in some adjoining convenient place for the purpose, and the other fed off on the field where they grow; as, by such means, a much larger quantity of land may be benefited and improved, without injury to the crops that may afterwards be grown on the turnip land.

In this mode of improving lands, a great deal more is yet probably capable of being done than has hitherto been the case, when its vast utility and powers in different ways are fully considered.

Some difference in the use and manner of confining this crop likewise takes place, from the kind of flock to which it is applied; as when used in the rearing, keeping, and fattening neats-cattle flock, it is, for the most part, pulled up and eaten, either after having been removed to some proper dry field or spot of ground of the grass or husk kind, or to some field or other building near the straw-yard or feeding-house; in the latter case, being given the flock in bins, troughs, or cribs, or placed before the heads of the cattle in stalls, when tied up, that are contrived for the purpose. The latter of these two modes of eating the root is suppos’d the better, though less frequently made use of, as there is the least possible waste, while, at the same time, the dung and urine of the cattle are the most extensively and effectually prepared. In the former of these methods, the usual practice is first to admit the fattening flock, and then to allow the lean to follow them, and eat up what may remain. In this way there is the least loss.

The cattle are mostly confined wholly upon the roots, except when prevented by the state of the feaven, when they are conformed in other places, or as above. In some cases, the lands to which the roots are removed, in this method of feeding, are those intended to be used for other crops in the ensuing year, by which the different fields, of course, in their turn, have the benefit of being improved in this way most conveniently; and the practice is found more useful than feeding them on the land where they grow. The roots, in these cases and modes of confining them, should not be scattered over the ground in too thick a manner; as, where that is the case, much loss must necessarily be sustained by their being crushed and bruised by the feet of the flock, while upon them.

These several different practices are much had recourse to in some southern turnip districts, where great numbers of different sorts of this kind of flock are every year fattened on turnips.

In cases where milk is a principal object with the farmer, this plant and root are also capable of great use as a proper juicy food for cows, care being taken that the decayed leaves
leaves and other parts be not given, as they are apt to communicate a disagreeable flavour to it. The offal produced in such cases may be given to the dry flock, by which little or no lofs will be sustained in the consumption of the root. This tafe in milk is said to be completely removed by the use of a very weak solution of nitre in water.

These roots, too, have been usefully applied in feeding the flock of work-horses, as by their means the usual quantity of corn may, it is said, be lefened nearly one-half, and the horses never strike in at the same time, as well as perform their labour equally well, and be more free from bowel complaints than in the common manner of feeding them. When used in this way, they should, however, be chopped, and have dry feed of some sort joined with them in proper quantity.

The most extensive use and application of this crop is, however, in its consumption by sheep, particularly where the more suitable improved sorts prevail, in which the most general practice, where the lands are properly light and dry for the purpose, is that of confining them upon a suitable proportion of the crop by hurdles, or other means, and removing them to fresh parts, portions, or breaks, as they are sometimes called, every eight or ten days, or oftener, according to circumstances, or as the spaces may be eaten and cleared by the flock. Where the crop is used as the food of ewes and lambs, the former are sometimes confined in this way, and the latter left at liberty, as feeding more readily in this manner. But where the foils are of a more deep and heavy retentive quality, it is more usual, and a better and more beneficial method, to have the roots drawn and removed, as wanted, to some adjoining field to be confumed by the sheep, somewhat in the way noticed for cattle; as, in this manner, there is not only less injury and waste by foiling and trenching the turnsips into the ground, but the sheep get a more certain and regular supply of fresh roots, by which they do better, and the sheff, by being left clean, are more fully and completely eaten up by the flore cattle that are afterwards put upon them for the purpose. In some cases, the stalks of the land too, in the former mode, it is the practice to have the crop partly eaten off on the land on which the turnsips grow by sheep, and partly drawn and removed, to be confumed in other places. In such cases, the method is usually to turn the sheep upon them, as they stand in the field; but, except the bulbs be much exposed above the foil of the land, it is probably a better practice to have the roots pulled up on the part, before the sheep are turned in and confined on it, as in this way they are not only less apt to break and foil the turnsips, but feed and fatten much better upon them. This practice is much in use in some southern districts.

In some situations, the hilly parts have the turnsips fed off in this manner by sheep, with a certain quantity of hay allowed for every acre thus eaten off, beginning with a break or portion from the lowest part of the field, and allowing a new portion or hitch every day, till gradually rising, clearing the whole off in time for preparing the land for the following crop. The crops on the more flat and heavy parts of the lands are drawn and removed, to be eaten with hay or other dry food in proper places.

It has been suggested, that much lofs is often sustained in these modes of feeding off turnsips by foiling sheep upon them, particularly where the crops are raised in the broad- cast manner, and it is the custom to give the sheep large folds or breaks at a time, in consequence of fruit or snow taking place. In such cases, it is supposed the ridge or drill method is far preferable, as it is easy to have the pens or trays made and fixed in such a manner as to constitute a sort of moveable crib or trough, the bars being let near the sides of the rows, and the boards from ten to twelve inches in breadth, having stakes of suitable lengths, as the depths of the foils may be, nailed to them, and secured on the sides from which the sheep feed. The narrower the spaces the turnsips are included in, the better. As it may be imagined that the animals may get in among the turnsips when fenced off, it is said that, supposing the roots may occupy a regular space of about twelve inches, the troughs may be made little more than a foot in width at the bottom, having a sloping direction upwards. The bars may likewise have an inclination towards the sheep, and hang over the troughs or the parts in which the turnsips are included, and thus prevent them from getting in. It is supposed that in this way the sheep will have their food quite clean, and that by setting off only at a time the quantity necessary for a day, they may eat it with more avidity, and without the danger of spoiling so much by their discharges, as is mostly the case in the common circumstances of feeding upon the root.

On examination, it is contended that this mode, when even largely employed, will be found to be better in many respects, as well as a great deal cheaper, as, on the most moderate calculation, three sheep may be kept in this way to two by the common old method, or perhaps even double the number, and they will fatten much sooner. And on the principle that animals do not feed so well when a redundancy of food is before them, it is thought that if the sheep, in such cases, were driven into the straw-yards for the night, and even to eat from the morning, they would retain the turnsips longer, and fatten quicker; while, in the mean time, the persons employed in looking after them might move the hurdles a row further, and thus little time be loft. If both fattening and store sheep should be kept in this manner, it would be proper to give the feeding flock rather more roots than are sufficient for the day, and to turn in the store sheep the succeeding day to consume what may be left. In this mode, the length of turnsips that may be necessary, without waste being committed, may soon be discovered. It would seem, however, that from the constant trouble, difficulty, and expense of the plan, in providing hurdles, and fixing them for the lands, they would render it incapable of being put in execution, except in cases of a small number of sheep, where it may be an improvement, and a more economical manner of feeding off turnip crops by such forts of flocks.

In the practice of hurdles for this purpose, great attention is necessary to see that the hurdles are at first well set into the ground, and secured by stakes of sufficient length, with proper withs for tying them together, as after frosts and thaws, or snows, they are very apt to be thrown down by the wind, and other causes. The best fort of hurdles for this use is that of the flattened kind; and a material of the netting kind is sometimes employed, which is called fooling, but it is more expensive. See Hurdle.

In whatever manner the feeding off turnsips by sheep is done, the hurdles should always be set in such directions and forms, as that labour and expense may be saved as much as possible.

In some districts, the practice of feeding off these crops in a partial manner, or that of pull and throw, has given way to that of consuming them wholly upon the land, from the full conviction of its greater utility and profit; while in others, the mixed method of eating the root is still had recourse to, as being preferable for the purpose, and affording more benefit.

As it is found, in the fattening of sheep on this crop, that they make the greatest progress just before the turnsips begin to run and form their feed-items, which is supposed to
to depend partly on their containing the greatest proportion of rich nourishing matter at that time, and partly on the weather becoming more dry, warm, and settled; the shoots are sometimes mown off in the spring, and by the lateral sprouts and leaves, a more copious supply of green food is not only afforded, but the roots are preserved longer in a condition fit for use in this application. The feeding or fattening qualities of these roots are, however, much disputed by some, except when some sort of dry food is made use of with them.

In the feeding of these crops off by all sorts of flocks, regard is to be had on first turning upon them, that they do not continue too long, as otherwise injury may be sustained by the difference that is sometimes occasioned by their eating too freely of them, or their being beaten or blown.

Where these crops are drawn for winter and spring ufe, it is sometimes necessary to have them preferved in some way or other. See Turnips, Preferving of.

Great attention in many ways is necessary to turnip crops, as being the foundation of several of the most beneficial practices of the farmer.

Stealing or otherwise defoying turnips, when growing, is by statute punishable criminally, by whipping, small fines, imprisonment, and satisfaction to the party wronged, according to the nature of the offence. By 13 Geo. III. c. 32, the offender shall, on conviction before one justice, by confession on oath of one witness, forfeit such sum, not exceeding one guinea over and above the value of the goods stolen, as to the justice shall seem meet; and in default of payment, be committed to hard labour, for a time not exceeding one month.

No person shall be prosecuted for any such offence, unless the prosecution be begun within twenty days after the offence committed. The provisions of this act have been extended by statute 42 Geo. III. c. 67, in three particulars; viz. in the description of the offence, inferring injuring barns and orchards; in the penalty, making the sum not exceeding 20l.; and in the term of imprisonment, which is made two months.

Turnips, with regard to diet and medicine, are accounted a salutary food; demulcent, detergent, somewhat laxative and diuretic, but liable in weak stomachs to produce flatulencies, and prove difficult of digestion; the liquor, pressed out from them after boiling, is sometimes used medicinally, in coughs and disorders of the breast. The feeds have been accounted alexipharmic or diaphoretic; they have no smell, but discover to the taste a mild acrimony, seemingly of the same nature with that of mustard-feed, though far weaker.

Turnips, Preferving of, in Agriculture, the means of guarding and securing them against the effects of severe frosts and other such causes, by which they are not unfrequently much injured and rendered improper as the food of flocks. In cases where they are designed for the feeding or supporting of neat cattle or other kinds of stock, during the winter and very early spring seafons, as they are then extremely liable to become hurt and destroyed in this way, on account of the sudden alternations of frost and thaw that take place in the former period, this becomes particularly useful and necessary. For want of this attention, the roots often become quite rotten and wholly unfit for ufe, as well as difficult to be got up when wanted.

In the intention of preferving them, many different methods and practices have been attempted and had recourse to at different times, but hitherto probably without any of them having been attended with complete success, and at the same time so cheap as to answer the farmer's purpose.

The only perfectly secure mode would be that, probably, of having them drawn, topped, and piled up with layers of dry straw in hounes properly formed and constructed for the purpose, and conveniently situated for the feeds and other feeding places; but it would be liable to objection, except on a small scale, as being both troublesome and expensive.

A method of preferving this root, which is much in use, very effectual, little expensive, and attended with no great trouble, is that of drawing and piling the turnips up in different portions on the field where they are raised, with layers of dry straw put between each of thefe of the turnips. In this mode, which is much practifed in some southern counties, a load of straw is used to about thirty or forty tons of the turnips. The manner of effecting the work is said to be this: the turnips, on being drawn in a dry time, and the tops and taproots removed, a layer of straw is spread out on a dry part of the ground, and a layer of turnips placed upon it to the thickness of eighteen inches or two feet; after this another layer of straw, and then a layer of turnips; proceeding on, alternately in the same manner, until the pile or heap be brought to a sort of ridge or point; when the edges of the different layers of straw are turned up and fattened, which serves to prevent the roots from falling out, and at the same time affords a sort of external covering to the heap or pile, which is completed by being well thatched over the top with long straw.

It is supposed, too, by some, that the difficulty of getting them out of the ground, and the dangers they are exposed to in severe frothy seafons, as well as the inconveniences the flock experience in feeding upon them from their coldness, and the hazard of their injuring the land by remaining too long, may all be avoided by piling them up in a similar manner, in small heaps in the stack form, the tops outwards, near to the places in which they are to be consumed, covering them over with wattles or hurdles lined with straw.

In some cases, turnips have been attempted to be preferved by being formed, without straw, after the tops and small roots have been taken off, and the former used green, into a fhort of heaps termed pies, in the manner in which potatoes are sometimes kept, being well thatched over on the outfides by straw or some other more cheap material.

They have also been attempted to be preferved in the field by covering them by deep ploughing in different manners, when perfectly dry.

A great many other modes of preferving these roots have likewise been fuggled and practifed by farmers and others, but they need not be noticed here, as they mostly appear les useful than the above.

In all cases of preferving these roots in the heap manner, care must be taken not to have them made too large, or too closely packed up together, as the danger of their heating and being spoiled, may thereby be, in a great measure, avoided.

By some means of these forts, turnips may fublly be preferved, kept ready, and fit for ufe as food for live-flock, even in situations and feafons which are the moft exposed and severe, which under different circumstances are often matters of much conquence to farmers. See Turnip, supra.

Turnip, Sweefifh. See Ruta Baga.

Turnips, Stubble, the crops raised on lands after grain as wheep-feed, which on good dry soils often answer well. See Stubble-Turnips.

Turnip-Cutter, or Slicer and Chopper, contrivances of the cutting kind, which are made ufe of in preparing this fort of root for being eaten by different kinds of live-flock. Implements of this nature are formed and constructed on very different
different principles, but those which have the greatest simplicity are almost always to be preferred, as performing the work in the most easy and ready manner. There is a very useful tool for this purpose, in which the roots are cut by means of a knife fixed upon a fly-wheel, the turnsip being forced upon it through an inclined hopper or port of trough. Some turnip-slicers are so effective as to cut a bushel of the root in a minute.

The chopper is made by a fort of sharp small spade, either fixed or loose, working in a box, into which the roots are thrown for being cut or chopped. The work is readily executed in this way by those who are in the habit of performing it in this manner.

**Turnip-Drill.** That fort of drilling implement which is employed in the sowing of turnip-feed in the row manner.

An improved tool of this fort for one-bout ridges is in use in some districts, which obviates the defects of sowing too many or too little feed. It consists of a solid cylinder, made of iron or brass, about two inches in diameter, and one inch broad, on the surface of which are formed fifteen or sixteen cavities, resembling the shape of a semi-egg when cut longitudinally, and as deep as to hold four or five feeds each. On the back of the cylinder, a little from the top, is placed a hind part of the hopper, to which is fixed a piece of iron or brass, one inch long and half an inch broad, hollowed on the inside in the form of a Gothic arch, the sides of which meeting the sides of the cavities in an oblique angle, prevent the feed from being bruised; at the lower end of this piece of iron or copper, or gatherer, there is a slit, three-tenths of an inch long and one-tenth wide; and at the back of it, a thin flat piece of iron moves up and down by means of a screw at the top of the hopper, which enlarges or lessens the orifice directly above the cavities, and increases or diminishes the quantity of feed delivered, as the workman may think proper. This slip of iron, or regulator, is let into a groove made in the board, which forms the back-part of the hopper. The cylinder is fixed, before the cavities are made, on an iron axle one inch square, turned very true, as well as those parts of the axle which turn in the collars fixed in the handles. To the ends of the axle are fixed two wheels, twenty-six inches in diameter, which turn the axle and cylinder round, and which, in passing through the hopper containing the feed, bring forward in each cavity a number of seeds and drop them into the spout, by which means they are conveyed to the couler, which forms a rut or channel on the top of the one-bout ridge in order to receive them. If the cavities in this sowing implement be made to hold five feeds, when the regulator is screwed close down, and there be fifteen of them, it will deposit eighty feeds each revolution; and from the diameter of the wheels being twenty-six, and the circumference eighty-one inches and a half, eighty feeds will be sown in eighty-one and a half inches, or nearly twelve feet. This being the minimum quantity, by screwing up the regulator, the number may be increased gradually to fifty or sixty in a foot, which is far more than is necessary in almost any cafe.

There are various other improved implements of this nature, which suit different purposes of this fort of culture made use of in different circumstances and places. See **Drill and Turnip.**

**Turnip-Hoe.** A hoe employed in the culture of turnips, which is of the hand as well as the horke kind: the latter is the most ready and effectual, but both are frequently made use of in raising the crops.

A turnip-hoe chopper has lately been contrived, which is both useful in this way and for cutting the roots in feeding stock on the land. It has in the first part the make of the common nine-inch hand-hoe, but forming an oblong square, with an eye to receive the handle from the centre of the first part or hoe, another crosses it at right angles, but this second is not made solid, as in the first common one, but, like the Dutch-hoe, the centre part is open the whole length of it. In working, the turnip being pulled out of the ground by the angles of the hoe, is immediately struck with it about the centre, which divides it into four pieces, and if that be not small enough, the stroke is repeated upon each of the pieces until they be sufficiently fo. It is imagined capable of much improvement, by having two floutish prongs on the back or reverse part of the hoe, proceeding from the neck of the eye; these prongs would pull up the turnips with a great deal more expedition, it is supposed, and the increased weight of the hoe would rather be in its favour, by lessening the force necessary to split the roots. The whole is simple and the expense trifling, which renders it more valuable.

It is said that by means of this tool the turnips may each readily be sliced into as many parts, according to their sizes, as that each piece may be small enough for wether lambs, or, which is of more consequence, for being eaten by the crones, or old toothless ewes, which may fatten in this way with nearly equal facility as the young sheep, as they are capable of picking them up, and by a slight toss of the head, to place them so as to be properly consumed. They can thus feed on the root, when they would otherwise find it difficult to supply themselves with a sufficient quantity of food in the usual manner of nibbling the turnip, either while in the ground, or when picked up without being cut. It is the invention of Mr. Malcolm, and is in much use in the county of Surrey, but may be beneficial in many other districts, where the practice of feeding off the crops on the land by flock is a material object to the farmer.

Hand-hoes of from four to twelve inches in width are in use, in this kind of culture, for fetting out the plants and other purposes, as the nature of the crops may be. See Hoe and Turnip.

**Turnip-Rack.** A contrivance of the rack kind, for sheep eating this and some other forts of food out of with less waste than in some other ways. It is usually made about eight and a half feet long, and on one side two feet high, and on the other two feet three inches, without the feet, which are about three inches long. In the top, the middle part folds back on the rack, and on the lower part of it there is a bend, which serves as a gutter for preventing the rain-water falling from it on the sheep's back. The bottom opens the other way and leans against the top, for the convenience of carrying it. It is sometimes placed on low wheels. It is very useful and convenient in many cases of feeding and fattening sheep.

**Turnip Sowing Trough.** A contrivance of this kind for the purpose of sowing turnip-feed with regularity in the broad-call manner, where it cannot be done by the hand. It is somewhat in the box form, and so contrived as to deliver such small seeds with great exactness over the land. See **Turnip.**

**Turnip-Tray.** A long narrow shallow box of trough or box contrived and made use of for the purpose of sheeps eating turnips out of in confining them upon the land, in order to prevent waste in such modes of feeding.

**Turnip-Cabbage.** See **Cabbage and Kohlrabi.**

**Turnip-Rooted Cabbage.** See **Cabbage.**

**Turnip-Rooted Celery**, a root of that fort of the turnip form. See **Apium.**

**Turnip-Fallow**, in Agriculture, a term applied to that fort of preparation for the crop which is made by repeatedly working
working over the land in some way or other. The most improved practice is that of not having the autumn broken-up lands flitted again, until the surface-working in the early spring has well loosened the mould, to favour the growth of weeds, which is best performed by means of tools that operate the more superficially, as by this tillage keeping the upper parts fine and unburied that have been broken and reduced by the fruits, it is more suited to the rifing of such plants than that of turning it down in a deep manner, and the work is done with greater expedition, which is a material object at such a season. This is a most excellent method; but much must constantly depend on the nature and state of the land in such sorts of work. See FALLOWING and TURNIP.

TURNIP-Fly. Prevention of, the means of guarding and protecting young feeding turnip-plants against its attacks and ravages. Though many different means of this nature have been proposed, few have been attended with much success in preventing the crops. The substances which appear to be the most promising in this intention, are those of foot and quick-lime, and urine and quick-lime, in a state of mixture proper for being thrown over the plants on the land, in a watering manner, by some sort of contrivance for the purpose, or for being put in with the feed. It is supposed that the volatile alkali, which is given off by these mixtures, may be offensive to the insects; while at the same time they afford nourishment and ready growth to the plants. In a trial with lime flaked in urine, in mixture with three parts of foot, applied by means of a small barrel, perforated all round with little gimblet holes, so as to let the quantity of about four bushels to the acre pass out, and fall into the drills with the turnip-seed, the adjoining rows were found to be eaten away, while those to which the composition was applied were fearfully touched at all. The mixture of sulphur with lime has been used, but on a full trial found wholly inefficient. Ammoniacal fumes are said to be successful by some, but further trials are wanting, and they are not very well suited for the farmer's purpose. See SEED, STEEPING, and TURNIP.

TURNITZ, or TWARONICE, in Geography, a town of Moravia, in the circle of Brunn; 30 miles S.S.E. of Brunn.

TURNO VECECOMITUM, in Law, a writ that lies for those that are called to the sheriff's turn, out of their own hundred.

TURNPIKE, a gate set up across a road, watched by an officer for the purpose, in order to stop travellers, wagons, coaches, &c. to take toll of them, or money towards repairing or keeping the roads in repair. See ROAD.

There are several statutes, which have established regulations relating to turnpike-roads, the principal of which, besides those recited under HIGHWAY, are as follow. No person shall be capable of acting as a trustee in superintending turnpike-roads, who is not possessed of lands, &c. of the clear yearly value of 40s., or personal estate to the value of 80l.; to which purpose he makes oath before two trustees, or their apparent of a person possessed of an estate in land of the clear yearly value of 80l. No alehouse-keeper, nor persons retailing liquors of any kind, are capable of acting as trustees, or holding any place under them, or collecting the toll; but they are not precluded from farming the tolls, provided some other person collects them. No gate-keeper, or person renting the tolls, and residing in the toll-house, shall gain a parcel settlement, nor shall the toll, or toll-house, be allied to the poor-rate, or any other public or parochial levy. Any gate-keeper, permitting a violation of the orders pertaining to carriages and horses, and not proceeding with

in one week for the recovery of forfeitures, shall forfeit 40s.; and both he and the surveyor shall render upon oath, when required by written notice from the trustees, an account of all money received, on pain of 5l.; and all officers shall deliver up their books, &c. relating to the execution of their offices, within ten days after written notice, on pain of 20l.; and all persons concerned in the execution of acts relating to turnpike-roads, neglecting their duty, shall forfeit 10l. The trustees, whose meetings are assembled by ten days' notice affixed on the toll-gates, or other conspicuous places, and adjourned for no longer time than three calendar months, or any five of them, may cause weighing-engines to be erected at the toll-gates, order the weighing of carriages and their loads, and take an additional toll for every hundred weight, over and above the following weights: viz. for every four-wheeled carriage, having the fellow of the wheels fifteen inches broad, eight tons in summer, and seven in winter; for every waggon and wain, with axles of different lengths, having the distance of the nearer pair of wheels on the ground not more than four feet two inches, and the distance of the other pair such, that the fore and hind wheels shall roll only a single surface fifteen inches wide, at the leaf, on each side of the carriage, and the fellow nine inches from side to side, six tons ten hundred in summer, and six tons in winter: for every four-wheeled carriage, having the bottom of the fellows of the wheels nine inches broad, six tons in summer, and five tons ten hundred in winter: for every cart, having fellows of nine inches, three tons in summer, and two tons fifteen hundred in winter: for every waggon, having the fellows of the wheels five inches broad, four tons five hundred in summer, and three tons fifteen hundred in winter: for every waggon, rolling a surface of eleven inches, five tons ten hundred in summer, and five tons in winter: for every cart of the same dimensions, two tons twelve hundred in summer, and two tons seven hundred in winter: for every waggon, having the bottom of the fellows of the wheels of less breadth than six inches, three tons ten hundred in summer, and three tons in winter: and for every cart of the same dimensions, one ton ten hundred in summer, and one ton seven hundred in winter. The trustees, however, of the several turnpike-roads within ten miles of London, Welwyn, and Southwark, are allowed to lower these additional tolls at pleasure. (14 Geo. III. c. 82.) The toll-taker offending against these regulations, incurs a forfeiture of 5l.; but the preceding regulations of weight do not extend to any carriage employed in husbandry, and carrying manure for land, hay, straw, fodder, or corn unthreshed; excepting hay or straw carried for sale; nor shall any toll be taken for horses belonging to officers or soldiers upon their march, or upon duty, or for any horses, cattle, or carriages, employed in carrying their arms or baggage, &c. It is required that a table of the several tolls be put up at every toll-gate. (18 Geo. III. c. 63.) For the encouragement of broad wheels, the trustees are empowered to reduce the toll of carriages, having wheels six inches broad, so that it may not be greater than that which is taken for four-wheeled carriages drawn by four horses; and for carts, having the fellows of their wheels six inches broad, no more than for carts drawn by
by three horses; but for every carriage, having the fellies of the wheels of lefs breadth than fix inches at the bottom, and for the horfes, &c. one-half more than the tolls payable for the fame respectively, except carriages carrying corn in the straw, hay, straw, fodder, dung, lime for the improvement of land, or other manure, and implements of husbandry. The fellies of the wheels of carriages entitled to the above exceptions, and the tire upon them, are required to be so flat, as not to deviate more than one inch from a flat surface. And all carriages, moving upon rollers sixteen inches broad on each fide, with flat surfaces, fhall pay only fo much toll as fhall not exceed half of the full toll payable for carriages having the fellies of the wheels fix inches broad, and not rolling a surface of sixteen inches on each fide; and half-toll fhall be paid for waggons having the fellies of the wheels nine inches broad, and rolling a surface of sixteen inches on each fide. These regulations do not extend to any chaffe-marine, coach, landau, berlin, chariot, chaise, chair, calah, or hearfe; nor to the carriage of ammunition or artillery for his majesty's service; nor to any carriage drawn by one horfe, or two oxen; nor to any carriage having the fellies of the wheels nine inches broad, and laden with one block of flone or marble, one cable-rope, and one piece of metal or timber; and no toll fhall be paid at any turnpike-gate for carriages employed in carrying materials for the repair of any turnpike-road, or public highway. No four-wheeled carriage, having the fellies of the wheels of lefs breadth than fix inches, fhall pafs on any turnpike-road with more than four horfes. Two oxen or neat cattle fhall be confidered as one horfe. For other regulations relating to the number of horfes, fee HIGHWAY. Any carriage may be drawn with any number of horfes upon a turnpike-road, where a weighing-engine fhall be erected, provided the carriage be weighed at fuch engine; and the truftees may allow for hills, the rife of which fhall be more than four inches in a yard, fuch number of horfes as they fhall think neceffary, not exceeding ten for waggons with nine-inch wheels, nor fix for carts with nine-inch wheels; and not exceeding feven for waggons with fix-inch wheels; nor five for carts with fix-inch wheels; and not exceeding five for waggons with wheels of lefs breadth than fix inches, nor four for carts of fuch dimensions. There is also an exception in favour of carriages that are drawn in deep snow or ice. No carriages, with the fellies of the wheels of lefs breadth than nine inches, fhall be allowed to pafs upon any turnpike-road, if the fame fhall be drawn by horfes in pairs; except fuch, having the breadth of the fellies fix inches, authorized by fevent or more truftees, and carriages drawn by two horfes only. The penalty, on conviction, by feinement or oath of one witness, is a forfeit not exceeding 5s. nor lefs than 10s. The penalty of evading the tolls, by unloading goods, is 5s.; by turning out of the road, for the owner, any fum not exceeding 5s. nor lefs than 20s.: but for the driver, if he be not the owner, any fum not exceeding 50s. nor lefs than 10s.; or by taking out horfes, 5s.; or by taking the benefit of any exceptions fraudulently, a fum not exceeding 5s. nor lefs than 40s. Exemptions in favour of cattle going to or from water, or pasturage, fhall extend only to fuch as fhall be driven from one parifh to the next adjoining, or that fhall not pafs upon the turnpike-road more than the space of two miles. Turnpike-roads are kept in repair by the flate-duty, required by the ferval acts, or if this be insufficient, by contracting for labour, &c. The surveyor of any turnpike-road, who fhall cofWER to remain in any part, within ten feet on either fide of the middle of it, for four days, any heap of ftones, rubbifh, &c. obftrueting the paffage of it, fhall forfeit 40s.; and any perfon encroaching on it by a ditch, fence, &c. fhall forfeit 40s.; and the truftees may direct prosecution by indictment for any nuissance, at the expense of the tolls. See HIGHWAY and ROAD.

If any perfon shall willfully or maliciously deftroy any turnpike-gate, poft, rail, wall, chain, bar, or other fence, set up to prevent passengers from paffing without paying toll, or any house erected for the use of fuch gate, or any weighing-engine, or refuce any perfon in custody for fuch offences, he fhall be found guilty of felony, and transported for feven years, or committed to prifon for any time not exceeding three years. The indictment for fuch offences may be inquired of, heard, and determined in any adjacent county; and the hundred fhall answer damages, as in cafes of robery. If the truftees erect a gate where they have no power, the juflices upon complaint may order the sheriff to remove it. As for direction-stones, &c. fee HIGHWAY.

The truftees are empowered to let the tolls to farm, in confequence of public notice, to the beft bidder; and if the farmer of the tolls fhall take a greater or lefs toll than he ought to do, he fhall forfeit 5l. and the contract; and every other gate-keeper, offending in the fame way, fhall forfeit 40s. The truftees may alfo leffen the tolls during fuch time as they fhall think proper, provided that the perfons entitled to five-thifts of the money remaining due upon fuch tolls confent. The penalty for obftrueting the execution of any turnpike-act is a forfeit of a fUM not exceeding 10l. nor lefs than 40s. to be paid to the Surveyor for the use of the road, or commitment to the common gaol, or house of correction, for any time not exceeding three months, unless the money be sooner paid. Perfons aggrieved by proceedings in the execution of turnpike acts may appeal, with previous notice, to the general quarter-fellions, when the juflices fhall determine the appeal, and award costs, &c.

But all actions are limited to thirty-three calendar months after the fact committed, and to the county where the defendant resides, or the fact was done; and the defendant may plead the general issue, and if he prevails in the action, have treble costs. 13 Geo. III. c. 84. 14 Geo. III. c. 82. 16 Geo. III. c. 39. 17 Geo. III. c. 16. 18 Geo. III. c. 28. c. 63. Burn's Justice, art. HIGHWAYS.

The fix turnpike-road erected by law was A.D. 1663. 16 Car. II. c. 1.

TURNPIKE is alfo ufed, in the Military Art, for a beam fluck full of spikes, to be placed in a gap, a breach, or at the entrance of a camp, to keep off an enemy. See CHEVAL de frise.

TURNSOLE. See TURNESOLE.

TURNSPIT, VERSATOR, in Zoology, a variety of the dog (which fee), which belonged, in the arrangement of Dr. Caius, to the clafs of degeneres, curs, or mongrels. This breed is much on the decline in England; though still ufed in some other countries.

TURNSTONE, in Ornithology, the English name of a bird, the tringa morinellus of Linneaus, called by authors morinella marina, or sea-dotted. It is a little larger than the blackbird; its head moderately thick, and its body of a longish shape; its beak a finger's breadth long, thick and whitish at the base, and sharp and black at the point; and its head, neck, shoulders, wings, and the upper part of its breast, are of a brownish colour; its throat and forehead are ah-coloured; the back and rump are white; the middle of its back is marked with a very large triangular black spot; the tail confines of twelve feathers, the lower half white, the upper black, and the tips white; the quill-feathers are dusky, but from the third or fourth the bottoms are white, increasing to about the nineteenth, when the
the feathers are entirely of that colour. Its legs are short, and of a reddish-yellow or orange-colour. These birds take their name from their method of searching for food, by turning up small stones with their strong bills, to get at the insects that lurk under them. Ray and Pennant.

Mr. Pennant mentions another species, which is the turnstone from Hudson's Bay, and the _irima interprets_ of Linnaeus; often shot in the north of Scotland and its islands, and also in North America. This bird is of the size of a thrush; the forehead, throat, and belly are white; the breast black; the neck surrounded with a black collar, whence another bounds the sides of the neck, and puffs over the forehead; the head and lower part of the neck behind white; the first streaked with dusky lines; the back ferruginous, mixed with black; the coverts of the tail white, crossed with a black bar; the tail black, tipped with white; and legs rather short, and of a full orange.

**TURN-UP COMPASSES.** See COMPASSES.

**TURNWRIST PLough.** See PLough.

TURO, in Geography, a town of Naples, in the province of Bar; 22 miles S.S.W. of Converano.

TUROE, a small island of Denmark, in the Little Belt; 12 miles S.W. of Affens, in the island of Funen.

TUROK, a mountain of Persia, in Khorassan; 15 miles S. of Mechfud.

TURON, a sea-port town of Cochinchina, in a bay to which it gives name, and which is deeply indented, so as to afford shelter in some or other of its inlets from every blast of wind; the bottom is mud, and the anchorage safe, with a smooth water throughout. N. lat. 16° 9'. E. long. 158° 6'.

As this harbour affords a safe retreat for ships of any burden, during the most tempestuous seasons of the year, Mr. Barrow undertook to draw a plan of it agreeably to geometrical admeasurement. The particulars of the operation and its result are detailed in Macartney's Embassies to China, and minutely illustrated by means of a chart. This chart exhibits an irregular mountainous peninsula, inaccessible on every part of the coast, except that adjacent to the harbour, and at two small sandy bays in the entrance. This peninsula was named New Gibraltar, on account of the local natural advantages which it possesses, and which renders it capable of being made, like our Gibraltar, impregnable. The natives call this peninsula Tien-tcha. United to this peninsula is a level ill-mus, from three-quarters of a mile to a mile in width, containing several small villages and patches of ground, under cultivation, chiefly of rice, tobacco, pufle, and sugar-canes. The chart presents also to view the principal town in the vicinity of the harbour, at which the market is held: the adjoining land is well cultivated; and the name given to the place by the natives, as well as to the harbour, is Han-fan. Connected with the peninsula by a reef of rocks, unnoticed at low water, is the northern point of a small island clothed with trees and thick brush-wood: and as the depth of water is three fathoms within a ship's length of the southern extremity of the island, a convenient place might be prepared, at a small expense, for keeping down and repairing ships. The rocks might be the foundation of a pier or caueway, and thus an excellent dock might be constructed between the island and this peninsula. Such a place would be well adapted for a repository of naval stores, magazines, or warehouses. Other appendages to this harbour are described and represented in the chart; and particularly a valley with a small village, and about forty or fifty acres of land under tillage, mostly bearing rice; a large village on the banks of a considerable river, meandering through an extensive and apparently fertile and populous valley, a cove with plenty of water for ships of any burden, good anchoring ground, well sheltered, especially from the north-east monsoon, and having at its head an extensive plain, with two villages separated by a small running stream, with forty or fifty acres employed in the culture of rice; and a group of curious marble rocks, extending across the ill-mus, one end being washed by the sea, and the other over-hanging the river. The adjacent country is supposed to be, in general, healthy, the violent heat of the summer months being tempered by regular breezes from the sea. September, October, and November, are the season of rains; which are also frequent in December, January, and February, attended at this time by cold northerly winds. The inundations, which take place, generally, once a fortnight, and last two or three days at a time, have an effect similar to that of the periodical overflows of the Nile, in rendering the country one of the most fruitful of the globe. In many places, the land produced three crops of grain in the year. Its most valuable produce, besides the precious metals, consigned in pepper, cinnamon, sugar, silk, and cotton, which the natives give in exchange for a variety of European manufactures. Not far from the harbour of Turon is the town of Fai-fou, a place of some note, and about eight miles E. of the mouth of a considerable river on the coast of Cochinchina, on the banks of which lies Fai-fou; and opposite to the said mouth of the river is Callao, or, as the Europeans call it, Campello, the bearing of its highest peak from the harbour of Turon being about S.E., and the distance from it thirty miles. Staunton's Emb. to China, vol. i. See CALLAO.

**TURONES, or TURONI, in Ancient Geography, a people of Gaul, described by Lucan (i. i. v. 437.) under the epithet of unfitable.**

"Inhabitabes Turones circumcrita causa coercent." According to Ptolemy, they had a town, which he calls "Cefarodunum," and he names the people "Turupii." Their city was situated in the midst of the Loire, and they inhabited the territory that lay to the N.W. of it, and belonged to the third Lyonnae, of which their city became the metropolis. They had the character of not being fond of war: Tacitus calls them "Turones imbelles," and Sidonius Apollinaris says of them, "bella timentes defendit Turones." When the Roman empire was destroyed in Gaul, the Vifgoths became masters of this city under the reign of Eueric, and it belonged to them under that of Alaric in the year 506. But Clovis, having vanquished and killed this prince in 507, took possession of the whole territory from the Loire to the Pyrenees, and also of the city of Turones, the name of which has been since changed to that of Tours; which see.

**TURONILLA, in Ichthyology, a name given by some authors to the common little prickly fish called the fickle-back, or barbiflicate.**

**TUROOT, in Geography, a town of Hindooftan, in Lahore; 25 miles S.E. of Jummo.**

**TUROQUA, in Ancient Geography, a town of Spain, on the route from Braccara to Alurica, between Burbida and Aque Celeninx. Anton. Itin.**

**TUROWLA, in Geography, a town of Poland; 20 miles S.E. of Ploczko.**

**TURPE, a town of Weffphalia, in the bishopric of Paderborn; 3 miles S.E. of Salzktotten.**

**TURPENTINE, Terebinthina; a transparent fort of renous juice, flowing either naturally, or by incision, from several uncious and renous trees: as the terebinthus, larch, pine, fir, &c. Medical writers distinguish four kinds of turpentine; as that
that of Chio or Cyprus, that of Venice, that of Strafburg, and the common turpentine.

The turpentine of Chio, or Cyprus, which is the finest genuine kind, and that which gives the denomination to all the rest, is generally about the consistence of thick honey, very tenacious, clear, and almost transparent, of a white colour, with a cast of yellow, and frequently of blue, of a warm, pungent, bitterish taste, and a fragrant smell, more agreeable than that of any of the other turpentines.

This is the produce of the common terebinth, or pistacia terebinthus of Linnaeus (see Pistacia), an evergreen bacciferous tree or shrub, growing spontaneously in the Eastern countries, and in some of the southern parts of Europe. The turpentine brought to us is extracted in the islands whose name it bears, by wounding the trunk and branches a little after the buds have come forth; the juice isfues thin and clear as water, and by degrees thicken into the consistence in which we meet with it. A like juice, exuding from this tree in the East, inspissated by a flow fire, is said by Kempfer to be used as a masticatory by the Turkish women, for preferring the teeth, sweetening the breath, and promoting the appetite.

The turpentine of Venice is usually thinner than any of the other sorts, of a clear whitish or pale yellowish colour, a hot, pungent, bitterish, disagreeable taste, and a strong smell, without the aromatic flavour of the Chian kind. The true Venice turpentine is said to be obtained from the larch-tree, or pinus laris of Linnaeus (see Pinus), growing in great abundance on the Alps and Pyrenees, and not uncommon in the English gardens. For this purpose, incisions are made at about two or three feet from the ground into the trunk of the trees, and into these they fix narrow troughs, about twenty inches long. The end of these troughs is hallowed, like a ladle; and in the middle is a small hole bored, through which the turpentine runs into a receiver placed below it. The people who gather it visit the trees morning and evening, from the end of May to September, to collect the turpentine out of the receivers. When it flows out of the tree, it is clear, like water, and of a yellowish-white; but as it grows older, it thickens, and becomes of a citron colour. No trees under twelve inches in diameter are tapped; but vigorous trees will yield annually seven or eight pounds for forty or fifty successive years, or during the term of their life. They are of a more graceful kind than that of the trunk; distilled while fresh, they are said to yield a fine essential oil, called by the Germans carpathicum oleum, much superior to that of the turpentines.

The oil of turpentine is obtained by distilling the resin with water in a common still, when the oil is found in the receiver swimming on the water, from which it is easily separated: the average proportion is 60 lbs. of oil from 250 lbs. of good turpentine. This procès is carried on both abroad and at home; but the oil drawn in this country is always preferred.

The Canada turpentine (see Balsam) is obtained from a tree which is a native of North America, that flowers in May, and is brought to this country in casks, each of which contains about one hundred weight. It has a strong not disagreeable odour, and a bitterish taste; it is transparent, whitish, and has the consistence of Copaiba balsam.

Although Linnaeus, and several other writers on the Matteria Medica, refer the common turpentine to the pinus sylvestris, and the terebinthina argentinotarsis, or Strafburg turpentine, to the silver fir-tree; yet upon the authority of Murray, who follows Du Hamel and Haller, Woodville has ascribed the terebinthina vulgaris to the pinus picea, which pours out the turpentine so freely, that it is seldom necessary to make incisions through the bark for the purpose.

All these juices dissolve totally in rectified spirit, but give out little to watery menstrua: they become miscible with water
water into a milky liquor, by the mediation of the yolk or white of an egg, and more effectually by mucilages. Distilled with water, they yield a considerable quantity of a subtile, penetrating, effiential oil, vulgarly called spirit. Neumann says, that sixteen ounces of Venice turpentine, being distilled with water, yielded four ounces and three drachms of effiential oil; and the fame quantity, distilled without water, yielded with the heat of a water-bath, two ounces only. The effiential oil cannot without great difficulty be diffolved in spirit of wine: one part of the oil may be diffolved in seven parts of rectified spirit of wine; but on standing a while, the greatest part of the oil separates, and falls to the bottom. After distillation of turpentine with water, a yellow or blackish resin remains in the still, which is the common resin of the shops. See Rosin and Burgundy Pitch.

The effiential oil, re-distilled by itself in a retort, with a very gentle heat, becomes more subtile, and in this state is called ethereal oil; a thick matter remaining behind, called balsam of turpentine. A like balsam is also obtained by distilling with a stronger fire, the common resin; from which there arises, first, a thin yellow oil, and afterwards the thicker dark reddish balsam, a blackish resin, called colophony, remaining in the retort.

All the turpentines are hot stimulating corroborants and detergents. They are given, where inflammatory symptoms do not forbid the use of them, from half a scruple to half a drachm and upwards, for cleansing the urinary passages, and internal ulcerations in general, and in laxes of the seminal and uterine vesicles. They seem to act in a peculiar manner on the urinary organs, impregnating the water with a violet smell, even when applied externally, particularly the Venice oil. This last is accounted the most powerful as a diuretic and detergent, and the Chio and Strauburg as corroborants. They all loosen the belly, but the Venice most; and on this account they are suppos'd by Riverius and others to be less hurtful than such irritating diuretics, as are not accompanied with that advantage. Dr. Cullen remarks, that terbinthylane glyters, in obtinate coltivines, are much preferable to saline, as being more certain and durable. When turpentine is carried into the blood-vessels, it stimulates the whole system; and hence its use in chronic rheumatifs and paralyzis.

Turpentine readily passes off by urine, which it imbues with a peculiar odour; also by perspiration, and probably by exhalation from the lungs; and to these respective effects are to be ascribed the virtues it may possess in gravelly complaints, febrity, and pulmonic disorders. In all these diseases, however, and especially the last, this medicine, as well as some of the gums and balsams of the terbinthinate kind, by acting as stimulants, are often productive of miscarriage, as was first observed by Boerhaave, and since by Fothergill.

Turpentine has been much used in gleet and fluor albus; its efficacy in the former of these disorders is ascribed by Dr. Cullen to its inducing some degree of inflammation of the urethra: in proof of which he says; "I have had some instances, both of turpentine and balsam of copaiba producing a manifest inflammation in the urethra, to the degree of occasioning a suppreffion of urine; but when these effects went off, the gleet which had subsisted for some time before, was entirely cured." Of these turpentines which we have described, the Venice and Canada turpentines are more generally employed for internal purposes, the Chian not being so easily procured; and the common turpentine is offensive to most stomachs, so that its principal use is in some external applications, among the farriers, and for the distillation of the oil.

The oil is a most potent, stimulating, detergent diuretic. It is sometimes given, in doses of a few drops, in rheuma-
tifs and fixed pains of the joints; and some have ventured on much larger quantities. Cheyne recommends (Eff. on the Gout, p. 199, ed. 10.), as a perfect cure for sciatics, though of many years standing, from one to four drachms of the ethereal oil, to be taken with twice its quantity of honey, in a morning fafting, with large draughts of fack- whye after it, and an opiate at bed-time: this medicine is to be repeated, with the occasional intermiffion of a day, if daily repetitions cannot be borne, for four or five days, or eight at farthest. It appears, however, says Dr. Lewis, highly imprudent to venture on such large doses at once, of a medicine so very hot and stimulating. Boerhaave, after recounting, not without some exaggeration, its fypitic, anodyne, healing, antifeptic, and diluent virtues, when applied hot externally, and its aperient, warming, fudorific, and diuretic qualities, when taken internally, adds, that it must be used with great caution; that when taken too freely, it affects the head, excites heat and pain therein, and, violently urging a diabetes, brings on a flux of the femen and of the liquor of the proflates; and that in venereal runnings, in which it has by some been commended, it tends to inflame the parts, and increafe the disorder.

The oil of turpentine, taken in too large a dose, hath very often bad consequences; such as a frangury, bloody urine, and its total suppreffion, or a fever, violent thrift, and vomiting.

In the Medic. Eff. Edinb. vol. ii. art. 5, we have an account of such symptoms produced by the taking of two drachms of this oil in warm ale. The patient was cured by a warm bath, and drinking plentifully of Fuller's emuljio Arabica.

The oil has lately been given with beneficial effect in unusually large doses for the expulsion of the tape-worm. It differs in its action from the other remedies which have been employed against tape-worms, by killing the worm before it throws it out, and hence it promises to be more permanently useful. The oil is useful when dropped into the ear in deafnesses occasioned by defect of wax. As a diluent, it is applied to indolent tumours, and is an useful primary application to burns.

Turpentines are usually given in doses of grs. x to 3; either made into pills with powder'd liquorice-root, or diffused in water by means of almonds, mucilage, or yolk of egg. The dose of the oil may be m to 5, to produce its diuretic effect: but for the expulsion of tenia, it is necessary to give from 3 to 5, repeated every eight hours till the worm is thrown out. In these large doses, it is more easily taken when exhibited uncombined. The officinal preparations of turpentine are, the "oleum terbinthine;" the "empplastrum Galbani comp.;" the "unguentum elemi comp.;" and of the oil, "hinumentum terbinthine."

This oil is generally used as a drier, to mix with the other oils; for which purpose it has greatly the advantage of drying-oil, with regard to colour, as it is perfectly transparent and white. It is used without any other preparation than mixing it, either alone or together, with drying-oil, with the other oils and colours. Turpentine is sometimes used with other bodies, to render spirit of wine a fit vehicle for colours. The balsam and the inspiflated resins are used chiefly externally: the balsam is less pungent than the oil, and the resins much less so than the turpentines in sublimate. The common yellow resin, in taste considerably bitter, is sometimes given as an internal corroboration, in preference to the turpentines themselves, as being divell'd of the stimulating oil. Turpentine, formerly much used as a digestive application,
cation, is, in modern surgery, almost wholly exploded. Lewis. Woodville. Thomson.

Turpentine may be of use to preserve the bodies of insects. Mr. Boyle took clear Venice turpentine, and evaporating to two-thirds, obtained a reddish transparent gum, clear of bubbles, easily soluble by heat, and as easily rendered brittle by cold. Having first pulverized it, he melted it for use, with a gentle heat, and dipped the body to be preserved several times in it, till it acquired a case of due thickness.

**Turpentine, Balsam, Oil, and Spirit of.** See _Turpentine_, supra.

**Turpentine-Tree.** See _Pistacia_.

This tree, besides its proper fruit, which succeeds the flowers in the usual way, is remarkable for producing what authors of little curiosity have named another fruit, called its horn. This horn is a membranous production, of the length and thickness of a man's finger; and what surprised those authors who esteemed it a sort of pod, was to find that it produced, not seeds, but living animals, which they called flies. The true history of this horn is, that it grows from the surface of the leaves, not from the flalks, in the manner of fruit, and is no natural production of the tree, but a mere accidental thing,occasioned by the wound of an insect on the leaf.

A certain species of animals called pucerons, is peculiarly fond of the juices of the turpentine-tree, and always takes its abode upon its leaves; and these horns are produced in the same manner with the galls of other plants. See _Pucerons_.

**TURPETH.** See _Turbith_.

**TURPIN, F. H.,** in _Biography_, an historical and biographical writer, was born at Caeo in 1709, where he became a professor, but afterwards removed to Paris, and employed himself as a copious writer. As he avowed few principles of government, he was under a necessity of quitting France for some time; but he died at Paris in a state of indigence, betraying neither impatience nor regret, at the advanced age of 90 years. _Nov. Diet. Hist._

**TURPINIA, in Botany, according to De Théis, is a new genus, dedicated by Humboldt and Bonpland, in their 5th fasciculus, to the honour of M. Turpin, an able botanical draughtsman, as well as a distinguished naturalist, the author of several articles in the _Annales du Musé d'Histoire Naturelle_. Respecting the characters, clafs, or order of this genus, we have no information; but the abilities of the person whose name it bears are conspicuous in the _Flora Parisiensis_, published by M. Poiteau and himself, in folio, with splendid plates, printed in colours, a work which unfortunately remains imperfect, for want of encouragement._

**TURPNI, in Geography, a mountain of Silefia, in the principality of Tefchen; 4 miles E. of Jablankau.**

**TURPO, a town of Peru, in the diocese of Guamanga; 36 miles W.N.W. of Guanca Velica.**

**TURQUOIS.** See _Turcois_.

**TURREA, in Botany, received that name from Linnaeus; but whether he designed to commemorate George a Turre, superintendent of the botanic garden at Padua, in the latter part of the 17th century, or Anthony Turra, a botanist of his own time, remains uncertain. The former published at Padua, in 1685, a folio history of plants, without figures, entitled _Dryadum, Amandryadum, Cloridique Triumphus_, which Linnaeus, when he wrote his _Bibliotheca Botanica_, had never been able to meet with, and which, when he afterwards acquired it, certainly could contribute little to his information, being a mere compilation of obsolete opinions. Anthony Turra, who lived at Vicenza, printed in 1765, a 410. dissertation on the _Farsiis_, a genus now established by Mr. Brown in _Att. Hort. Kew._ v. 3. 96. He also published, in 1782, a _Flora Italica Prodromus_, and is the author of an Italian dissertation on the _fritillariae_fruit virtues of Horae-ehufn bark. We cannot but regret that so distinct a genus, remarkable for its elegance as well as rarity, should not be more decidedly or satisfactorily apprised. _Linn. Mant._ 2. 150. _Sm. Plant._ Ic. f. 1. 150. Schrey. Gen. 285. _Willd. Sp._ Pl. v. 525. Mart. Mill. Diet. v. 4. _Cav. Dian._ 7. 362. _Juss._ 264. _Lamarck_ Ill. fl. 1. 351. Clafs and order, _Decandria Monogyna_, Nat. Ord. Tribul., 87. 1. _Linn. Melic. Juff._

**TURZIA, Gen. Ch. Cal. Perianthus inferior, of one leaf, bell-shaped, five-toothed, small, permanent. Cor. Petals five, linear, moderately spreading, very long, slightly dilated upward. Nectary a cylindrical tube, as long as the petal, or longer; its margin in ten acute spreading segments, sometimes divided. Stam. Filaments ten, very short, inserted between the teeth of the nectary; anthers erect, nearly ovate, emarginate. Fil. Germen superior, roundish, style thread-shaped, about the length of the nectary; stigma rather obtuse, corrugated. Peric. Capsule roundish, depressed, five-lobed, five-celled, with ten valves, bulblent lengthwise. Seeds kidney-shaped, two in each cell._

**Eff. Ch. Calyx with five teeth. Petals five. Nectary cylindrical, bearing the anthers between its segments. Capsule superior, five-lobed, five-celled. Seeds in pairs. Linnaeus knew but one species of _Turzia_, sent him by Koenig. The writer of the present article has delineated that, with two new species, in his _Plantarium Icones_, and has now an opportunity of adding a fourth; making, with one described by Cavanilles, and another by Helleniæs, six species in all. The whole are of a shrubby habit, with alternate, flaked, entire, simple, maily undivided, leaves, without _Ripas_, and flaked, lateral flowers, remarkable for their great length._

1. _T. virens._ Evergreen _Turzia_. _Linn. Nat._ 237. Wildl. n. 1. _Sm. Plant._ Ic. fac. 1. t. 16. _Cav._ Dian. 361. n. 524. _Leaves elliptic-lanceolate, emarginate, very smooth. Calyx and fruit silky._—Gathered by Koenig among the lava of extinct volcanoes in the East Indies. This is an evergreen tree, or shrub, with scattered, divaricated, round, brown, leafy branches, slightly silky in their youngest state only. _Leaves_ about three inches long, on short thick flaks, smooth and shining on both sides, terminating in a short, broad, notched point; furnished with a strong midrib, and innumerable finely reticulated veins; their under side much the palest. _Flowers_ in little, short, axillary tufts, on angular partial flaks, and accompanied by a few small leaves, as well as many linear silky _bracteas_. Calyx very small, silky, with five angles, and five small teeth. _Petals_ and _nectary_ smooth, slender and delicate, above an inch long; we shou'd suppose them to be white, or pale flesh-coloured; _Linnaeus_ thought the former, at least, were yellow. _Calyx_ a quarter of an inch in diameter, clothed with silky prominent hairs.

2. _T. pubescens._ Downy-leaved _Turzia_. "Helleniæs in Stockh. Trans. for 1788. p. 296. t. 10. f. 3._—_Wildl._ n. 2. _Leaves ovate, undivided or emarginate; downy beneath. Flowers aggregate. Calyx villous._—Native of the island of Hainan. The _fruit_ of this species has not been observed. We have never seen a specimen, nor are we possessed of any particular volume of the Stockholm Transactions, in which alone it is described and figured. Having formerly however examined that work, in order to contral this with the other species, we have no doubt of its being well defined.

3. _T. maculata._ Spotted-leaved _Turzia_. _Sm. Plant._ Ic.
II. Making T. f.peak marked and 205. Nectary the be and Joseph green fome Flowers 1588, a is teeth. Car-

This appears to be a tree, with deciduous leaves, which are perfectly smooth, of a broad, elliptical figure, bluntly pointed, 5 inches or more in length; marked with pale blotches on the under side, especially near the ribs. Footflaks channelled, half an inch long. Flowers two or three together, on smooth simple flanks, hardly an inch long, erect. Calyx quite smooth, except its silky edges; the teeth blunt. Petals three inches long, yellow in the dried specimen, a little downy externally at the upper part. Nectary, about the same length, slightly dilated, or funnel-shaped, at the top, with undivided segments. 4. T. sericea. Silky-leaved Turrea. Sm. Pl. 1c. t. 12. Willd. n. 4. (T. tomentosa; Cavan. Diff. 361. n. 522. t. 205. f. 2.)—Leaves elliptical; villous on both sides. Calyx and foot-flarks downy. Segments of the nectary divided.—Gathered by Commeron in Madagascar. The leaves are densely clothed, especially when young, on both sides, with short, haggy, silky hairs, and stand on downy footflaks. Some of them, in our specimen, betray symptoms of being occasionally angular, or very slightly lobed. The flowers are even larger than the last, their petals and nectary measuring each five inches. Their colour appears to be reddish, and both are externally downy. The segments of the nectary, an inch long, are divided half way down, into two almost capillary points. The fruit of this, as well as the preceding, is unknown. 5. T. lanceolata. Pink and Green Turrea. Cavan. Diff. 361. n. 523. t. 205. f. 1. Willd. n. 5.—Leaves elliptic-lanceolate, somewhat wavy, smooth. Teeth of the calyx downy, twice the length of its tube. Nectary longer than the petals, its segments bearing the anthers.—Gathered likewise in Madagascar, by Commeron. The leaves are quite smooth, rounded at each end, about two inches long, rather coriaceous; some of them wavy at the edge. Foot-

flarks rather short and flout. Flower-flaks solitary or in pairs, erect, angular, smooth, far more longer than the calyx with its teeth. Petals linear, an inch and half long; rofe-coloured in their lower half; yellow above; green and externally hairy, at the extremity; they cohere in our specimen, forming a tube, so as to resemble some of the tubular-flowered Erica, whose ilanoms moreover are imitated by the pale, prominent, ribbed nectary, bearing the feilie anthers, about the middle of its taper-pointed segments. This peculiar inflorence of the anthers, the apparently monopetalous corolla, and our ignorance of the fruit, have always prevented our publishing this beautiful plant as a Turrea; but Cavanilles seems to have found the petals distinct, and we follow his example in admitting it here, though still with great trepidation, on account of the anthers. 6. T. heterophyla. Various-leaved Turrea. Leaves ovate, undivided or three-lobed, with downy veins. Calyx downy, with short teeth. Petals somewhat flatulate, longer than the nectary.—Gathered on the Cape Coalt of Africa, by Mr. William Bras, and communicated to us by the right honourable Sir Joseph Banks, in 1795. This has slender, downy, leafy branches. Leaves two, or two and a half, inches long, on shortish, downy flaks; some of them ovate, pointed, quite undivided; others, rather the large, wedge-shaped at the base, dilated beyond the middle, into two, more or less distinct, blunt, lateral lobes; all thin, copiously veined, paler beneath; their principal veins downy on both sides. Flowers red, smaller than any of the foregoing, on downy flaks not an inch long, standing in pairs on one shorter, more downy, axillary common-flak, accompanied by a few small bracteas. Calyx angular, with broad, short, pointed teeth. Petals scarcely an inch in length, much dilated upwards, palest on the inside. Nectary two-thirds as long as the petals, exactly cylindrical, smooth. Feem to have almost capillary marginal teeth, between which are feated the large tumid anthers; but our specimen is not in sufficiently good order to allow us to speak positively to this point. The stigma is club-shaped, large and prominent. Fruit wanting. 7. TURREBA, the Earth-Apple, in Natural History, a name given by the people of Guinea, and some other parts of Africa, to a very fine kind of truffle, which they find in great plenty in their barren deferts, four or five inches under the sand. TURREFF, in Geography, a market-town in the district of the same name, and ilure of Aberdeen, Scotland; is situated on the banks of the Deveron, 43 miles N. by W. distant from Aberdeen, and 153 N. by E. from Edinburgh. It is a free burgh of barony, by charter of James IV. granted in 1511, whereby it was entitled to hold a weekly market and two annual fairs: the market is well supplied; and the number of fairs has been increased to seven. The principal manufactures are thole of linen-yarn, thread, and brown linen, and here is a considerable bleach-field. The church was rebuilt in 1794. Here was formerly an hospital belonging to the knights Templars; and also one for twelve old men, founded in 1272 by Cumyn, earl of Buchan, and richly endowed in the succeeding century by king Robert Bruce. The parish of Turrel extends round the town about 44 miles in every direction, except to the N.W. where it is bounded by the Deveron. Agricultural improvements have been lately introduced; and here are several considerable plantations. In the population return of the year 1811, the inhabitants of the parish are stated to be 2227; the number of houses 502.—Beauties of Scotland, vol. iv. Aberdeenshire, 1826. Car-

liltie's Topographical Dictionary of Scotland, 1815. TURRETS, Moveable, in the Roman Art of War, were of two forts, the left and the greater: those of the lefter fort were about 60 cubits high, with square fides, 17 cubits broad; they had five or six, and sometimtes ten stories or divisions, each of which was open on all fides. The greater turrets were 120 cubits high, and 23 cubits square, containing sometimtes fifteen, sometimtes twenty divisions. They were of great use in making approaches to the walls, the divions being able to carry folders, with engines, ladders, calling-bridges, and other necessaries. The wheels on which they moved were contrived to be within the planks, to defend them from the enemy, and the men who were to drive them forwards ffood behind, where they were moft fecure; the folders within were protected by raw hides thrown over the turrets, and guarding those parts that were moft exposed. See Tower. TURRET Island, in Geography, a small island in the Mergui Archipelago, N. lat. 10° 24'. TURRETINI, Benedict, in Biography, an eminent Protestant divine, was the defendant of an eminent family of Lueca, and born at Zurich in 1588, being the fon of a re-
fugee from his country on account of his attachment to the principles of the Reformation; and in 1612 became a parlor and proctor of theology at Geneva. He was employed in several successful missions, by the conduct of which he gained distinguished reputation; and died in 1631, with the charac-
ter of an eminent theologian, and a man of prudence and moderation. His works were, "A Defence of the Fidelity of the German Version of the Bible," written in French, and comprised in 3 vol. 4to. 1618—20, with a sequel in 1626; a variety of theological disputation in Latin, on the Calvinside System of divinity; and sermons in Italian and French. Moreri.
His son, Francis Turretini, was born at Geneva in 1623, and received his education under several eminent German professors, also at Leyden, and afterwards at Paris, where he attended the lectures of Gaffendi. Returning to Geneva, he was admitted to the exercise of his ministry. Having for some time officiated as pastor of the Calvinist church at Lyons, he became, on his return to Geneva in 1653, professor of theology, in which station he continued through life. He was employed in various departments of public business, and died in 1687. Among other theological writings, didactic and controversial, he published "Institutionum Theologicarum Elenchi et Partes tres," 1679—1685, exhibiting a fair and candid view of the points that were controverted between the different communions.

Moreni.

A son of the preceding, John Alphonso Turretini, and the most celebrated of the name, was born at Geneva in 1671, and having, in consequence of disdaining talents and application, the tuition of able masters, access to a well-flowered library, and an ample patrimony, laid the foundation of learning at home, he commenced, in his 20th year, his travels, and at Leyden studied ecclesiastical history under Spanheim. During his residence here he published, in 1692, his "Pyrrhonismus Pontificus, sive Theologico-Historicae de Variationibus Pontificiorum, circa Ecclesiae Infallibilitatem," designed to counteract the influence of Bosquet's book "Les Variations des Eglises Protestant," by shewing that the Roman Catholic church had been equally fluctuating in its opinions. At this time he visited England, and being introduced to Burnet, Tillotson, and Wake, he laboured to cancel the false notions that were entertained by some English divines concerning the Genevan church. Upon his visit to Paris, he is said to have astonished the doctors of the Sorbonne, in a public disputation, by the purity of his Latin, the depth of his reasoning, and his polite manner of arguing. When he returned to Geneva, he commenced the exercise of his ministry in 1694, and was much admired as a preacher. The magistrates established for him, in 1699, a professorship of ecclesiastical history, the duties of which he discharged without any salary. These lectures were introduced with an oration, "De Sacrarum Antiquitatum usu et Praelectione," and the substance of these lectures comprised a body of ecclesiastical history, divided into more than 300 dissertations. In 1701 he was chosen rector of the academy of Geneva; and in this station, which he occupied for ten years, he delivered ten annual discourses, displaying eloquence united with erudition and excellent moral sentiments. Upon being appointed to the office of professor of theology in 1705, he delivered an inaugural speech, "De Theologo Veritatis et Pacis studio." In his course of divinity lectures, he discussed the most important topics of divinity, without the formality of system; such as natural religion, the excellence and evidences of the Christian revelation, the perfections of the Deity, the interpretation of Scripture, and similar subjects. It was very much the object of his wish to unite all Protestants; and with this view he took part with those German ministers who, in 1706, obtained a dispensation from the necessity of signing the formulary, intituled "Confession," introduced during the violent disputes that had occurred concerning Grace and Predestination. Some other public offices were devolved upon him, which engaged his attention, and occupied much of his time and labour. His arduous exertions, together with the uneasiness that was occasioned by the perturbed state of Geneva, are thought to have shortened his life, which terminated in May 1737, at the age of nearly 66 years. His works in 3 vols. 4to, were published in 1737; and after his death appeared his Commentaries on the Epistles to the Romans and The Philalmonians. Moreni. Gen. Biog.


Gen. Ch. Cal. Perianth inferior, of four ovate-oblong, erect leaves, converging in a parallel manner, deciduous. Cor. crumiform, of four ovate-oblong, obtuse, erect, undissected petals, with erect claws. Stam. Filaments six, awl-shaped, erect, the length of the claws, two of them shorter; anthers simple. Pist. German the length of the flower, rounded, slightly compressed; style none; stigma obtuse. Peric. Pod remarkably long, straight, quadrangular, but with two opposite angles obsolete and flattened, of two cells, and two keeled ribbed valves, scarcely equal in length to the partition. Seeds very numerous, roundish, emarginate; their cotyledons accumbent.

Eff. Ch. Pod very long and straight, linear, two-edged; its valves ribbed and keeled. Calyx closed, erect. Corolla erect.

All botanists, who have examined into the subject, have found great difficulty in distinguishing this genus from Arabis (see that article); the character of the four prominent scales, or nectariferous glands, in the latter, being very uncertain. The style attempt at discriminating these genera that has ever perhaps been made, is Mr. Brown's, in the Hortus Kewensis, which is founded on the seeds of Arabis being ranged in a simple row in each cell, while those of Turritis compose a double one; for this is, in fact, the only real difference in our learned friend's characters. By his rule, Turritis hirsuta and alpina are removed to Arabis; while Brassica arvensis and Sisymbrium Loefelli, with probably some others, become species of Turritis. In the latter cafe, great violence is offered to natural affinity, but perhaps the character itself is not clear in S. Loefelli, and its merit is therefore not invalidated by this species, whose close relationship to S. Iris we have noticed in the proper place. (See Symbium.) We are almost perfudcd of the merit of the above distinction, in sending away to Arabis all the species of Turritis which have a simple row of seeds, and some of which have always been ambiguous. They meet in that genus with their natural allies. Nevertheless, as we have not yet treated of these species, we shall retain them here, for the present at least, indicating under each Mr. Brown's alterations, for the guidance of those who may wish to judge of his sentiments, or hereafter to conform to them. On subjects connected herewith, the reader will find some remarks under Tetradynea.
the numerous spreading radial leaves are very rough with partly forked hairs, toothed, or pinnatifid. Flowers cream-coloured, corymbose, very numerous, their common stalk greatly elongated, after flowering, into a dense cluster of long, slender, smooth, erect, flaked pods, each two inches long, and full of numerous small seeds, imbricated in two rows, as we have already mentioned, and not alternately crossing each other, so as to form a simple row. These seeds were formerly an article of the Materia Medica, being esteemed hot and dry, stimulating to the generative faculty, preserving against apoplexy, &c. virtues scarcely intelligible, or confidential.

2. T. levigata. American Smooth Tower-mustard. Wildl. n. 2. Mühlern. Cat. 61. Pursh n. 1.—Leaves all smooth, glaucous; radical ones obovate, flaked, forked, the root linear-lanceolate, entire, clasping the stem.—Sent from Pennsylvania by the Rev. Dr. Muhlenberg. On rocks from Pennsylvania to Virginia; rare; flowering in May and June. Very smooth and glaucous, about a foot high. Pursh. Root biennial. Stem quite simple. Radical leaves oblong, finely serrated; those of the stem arrow-shaped, the lowermost an inch long, lanceolate, obtuse, forked at the extremity; the rest smaller, narrower, entire. Flowers like the first species, but rather less. Pods erect. Willdenow.

3. T. frigida. Slender Tower-mustard. Allioni. Auct. 18. Wildl. n. 3.—Leaves all smooth and shining; radical ones ovate, somewhat flaked, slightly toothed; the root lanceolate, strongly toothed, sessile.—In meadows, and rather moist pastures, in several parts of Piedmont. Root white, woody. Stem two feet high, erect, quite simple, round, smooth, firm, clothed from top to bottom with alternate, close-prefixed leaves, which are tapering, not arrow-shaped, at the base. Flowers small, white. Pods linear, flat, acute, erect, above an inch long, thin at the margin; the lower ones on longish stalks, and leaf crowded. This species is akin to T. bisnuta. Allioni.

4. T. bisnuta. Hairy Tower-mustard. Linn. Sp. Pl. 360. Wildl. n. 4. Fl. Brit. n. 2. Engl. Bot. t. 587. Jacq. 1c. Rar. t. 126. Fl. Dan. t. 1040. Ehrh. Herb. 159. (T. n. 456; Hall. Hist. v. 1. 198. Arbosis bisnuta; Scop. Carn. v. 2. 30. Brown in Ait. n. 11. Erysimos similis hisnuta alba; Bauh. Prodr. 42. Barbarea muralis; Bauh. Hist. v. 2. 869.)—Leaves all rough, toothed in the middle. Stem hairy; the hairs simple and spreading. Branches straight, erect. Pod slightly quadrangular.—Native of dry open pastures, and old walls, in most parts of Europe; not very common in England; flowering in May. The root is strong, woody, and, as we believe, perennial. Stem generally several, one of which is much stronger than the rest, erect, a foot or eighteen inches high, leafy; branched, round, clothed with thick-felt, prominent, simple hairs, the flowering part only being smooth. Leaves toothed, chiefly about the middle, bluntish, all more or less hairy; the radical ones obovate, slender at the base, but not flaked; those on the stem sessile, or partly embracing it, rarely dilated at each side into a small auricle. Flowers numerous, small, white, not coloured. Pods forming a very long, close, erect clatter, all narrow, compressed, but the valves are more or less strongly keeled, so as to render the pod quadrangular; its surface is smooth and shining, beaded, in a manner, with the projecting seeds, which though inception of, of course, alternately, in two rows, range in one simple seris. When ripe the pods drop a little. Linnaeus originally confounded with this his T. alpina, whose leaves are all smooth on both surfaces; and also the following.

5. T. pracna. Early Tower-mustard. (T. n. 2; Ge-

nard Galoprov. 367.)—Leaves all rough, obutate, toothed in the middle. Stem hairy; the hairs forked and depressed, like those on the leaves. Branches straight, erect. Pods erect.—Native of Provence and Switzerland. Nearly out of flower when the hisnuta first expands, being full a month earlier than that species, from which, though very like in general habit, it differs in having larger flowers, tinged with purple in both calyx and petals; pods nearly flat, their valves with scarcely any sign of a rib or keel; and the hairs of the stem forked, or branched, depressed and entangled, as are all those on the leaves. The late Mr. Davall of Orbe in Switzerland first distinguished this plant from the foregoing.

6. T. patula. Spreading Tower-mustard. Ehrh. Beitr. v. 7. 159. Pl. Scelct. n. 28. Wildl. n. 5. (Tourrette cotoneuse; Rey. Mem. de la Suisse v. i. 169. Arabis spumalis; Allioni. Ped. v. 1. 268.)—Leaves all rough with spreading forked hairs, ovate, toothed, clasping the stem. Branches spreading.—Native of rocks in Switzerland, in a southern exposure. Favrod. Root annual, tapering. Stem one, or more, erect, about a foot high, round, leafy, clothed with forked or flary hairs, intermixed with longer simple ones. Branches axillary, alternate, slender, loosely spreading. Leaves hardly an inch long, clasping the stem with their heart-shaped base, hoary with minute, brisly, divided hairs, and ordered with tooth-like serrations; radical ones contracted at their base, disappearing early. Flowers corymbose, very small, white. Calyx not always, as Ehrhart describes it, quite smooth; we find it sometimes tipped with fine hairs. Pods spreading, very slender, an inch and a half long, their valves without any ridge or keel. The general habit of this species, except the pods, is more like Draba murullus than any other Tourrita. Allioni’s synonym, hinted by Reymer, is confirmed by a Piedmontese specimen from Dr. Moleners.

7. T. pubescens. Downy Tower-mustard. Desfont. Atlant. v. 2. 92. t. 163. Wildl. n. 6.—Leaves all rough with prominent hairs, coarsely toothed; those of the stem sessile. Branches spreading. Pods erect, downy.—Native of hills about Algiers, flowering early in the spring. This resembles T. bisnuta, but is less flaky, rather larger, with more spreading branches, and downy, leaf crowded, pods. The leaves are all more deeply serrated or toothed.

8. T. ovata. American Hairy Tower-mustard. Pursh n. 2. (T. bisnuta; Mühlern. Cat. 61.)—Radical leaves flaked, ovate, toothed, obtuse, rough on both sides with hairy hairs; those of the stem oblong, somewhat arrow-shaped, serrated, smooth above. Hairs on the stem depressed. Pods flat, smooth, scarcely keeled. On rocks from Pennsylvania to Virginia, flowering in May and June. Biehnial. Pursh. This also resembles T. bisnuta, to which we have formerly been disposed, like Dr. Muhlenberg, to refer it. The close-prefixed hairs of the stem, less prominent keels of the pods, and the flossy roughness of the upper surface of the stem-leaves, appear sufficient marks of distinction.

9. T. alpina. Alpine Tower-mustard. Linn. Syt. Veg. ed. 13. 502. Wildl. n. 8. Sm. Compend. ed. 2. 101. Engl. Bot. t. 1746. T. ciliata, Wildl. n. 7. Schleich. Catal. 59. Tourrette ciliata; Rey. Mem. de la Suisse, v. i. 171. Arbosis alpina; Brown in Ait. n. 10.)—Seeds somewhat toothed, smooth, distantly fringed and bearded; the radical ones obovate, the root elliptical, half embracing the stem.—Native of Gothland, Austria, Switzerland, and the west of Ireland, flowering about July or August. It was first observed in the latter country by Mr. J. T. Mackay, who gathered this plant by the sea-side at Rinvale, Cummamara, in 1806. Linnaeus originally confounded his own Gothland specimens as a mere variety of bisnuta.
hirsuta (see Fl. Succ. 236.), but afterwards corrected that error. The root is apparently biennial. Stem one, or more, from two to twelve inches high, simple, erect, leafy, round, mostly smooth. Leaves all smooth on both sides, fringed with simple or forked, scattered, spreading hairs, a few of which are often clustered into a little tuft at the tips; the radical ones are frequently tinged with red. The more evidently the leaves are toothed, the less they seem to be fringed, as observed in Engl. Bot. Flowers white, larger than in T. hirsuta, forming a simple corymb, soon becoming a long cluster of narrow smooth pods, whose valves are very perceptibly keeled. Reynier’s original specimen from Favrod proves his plant, and consequendy that of Schleicher and Willdenow, to be the Linnean T. alpina.

The T. ceravola of Allioni, Fl. Pedem. v. 1. 270. 1. 42. f. 2, being considered as an Arabis by Wulfen, who followed by Willdenow, Sph. Pl. v. 3. 557, as well as by Mr. Brown in Ait. Hort. Kew. v. 4. 104, we shall leave it there. However naturally allied this plant may seem to be to our last-described T. ritrita, it is at least as much akin to A. alpina, bellidifolia, and others of that genus.

TURRORAH, in Geography, a town of Hindooftan, in Goownda; 30 miles S.W. of Coomtah.

TURROW, a town of Hindooftan, in Bahar; 26 miles S.W. of Arrah.

TURRONG, a river of Asia, which empties itself into a lake, 18 miles S. of Candahr.

TURSHISH, sometimes written Terciz and Terffia, a town and district of Peria, in the province of Khorrân, 63 furfungs W.N.W. of Herat, lately taken possession of by the troops of his Perian majesty. The old city, called Saltanabad, is small; but to this a new one has been added, where the governor and his principal officers reside. They both together contain about 20,000 people, amongst which are 100 Hindoo families. The trade of this place arises principally from the importation of indigo, and other drugs, from the westward; wool and cloths, and rice, from Herat; and the chief export is iron, wrought in thick plates. The trifling quantity of European goods required is brought from Mazanderan. Between this city and Herat the country is in general mountainous, wild, and uncultivated. Kinneir’s Mem. of the Perian Empire.

TURSI, a town of Naples, in the Baficiana, the see of a bishop, suffragan of Mataria; 24 miles S. of Mataria. N. lat. 12° 17’. E. long. 16° 30’.

TURSIO, in Ichthyology, a name by which Bollanous, Scalliger, and several others, have called the phoca, or porpessif, distinffively from the dolphin, with which it is confounded by the vulgar. See Porspess.

TURSOSKA, in Geography, a town of Hungary; 16 miles N. of Bolefto.

TURSAL, a town of Sweden, in Weft Bothnia; 45 miles N. of Torne.

TURSEREDES, a town of Hungary; 14 miles N.E. of Zatmar.

TURTLE, in Ornithology. See Columbia.

Turtle, in Ichthyology, the name by which we commonly call the great sea-tortoise. See Tortoise.

Turtle-Shell. See Tortoise and Tortoise-Shell.

Turtle Bay, in Geography, a bay on the west coast of Africa. S. lat. 14° 56’.—Allo, a bay on the south coast of New Ireland, so called by captain Carteret. Dampier before called it “St. George’s Bay,” and from Bougainville it obtained the name of “Profin Bay.”

Turtle Creek, a branch of the Moongahela river. At the head of this creek general Braddock was killed in 1755.—Allo, a township of Ohio, in the county of Warren, containing 3442 inhabitants.

TURTLE INLET, a channel between two small islands, on the coast of New Jersey. N. lat. 39° 21’. W. long. 74° 47’. “

TURTLE ISLAND, a small island in the East Indian sea. S. lat. 6° 35’. E. long. 132° 51’.—Allo, a small island in the South Pacific ocean, surrounded by a reef of coral rocks.

S. lat. 19° 50’. W. long. 177° 57’.

TURTLE LAKE, a small lake of Canada. N. lat. 48° 34’. W. long. 71° 31’.

TURTLE POINT, a cape on the south coast of Java. S. lat. 7° 42’. E. long. 109° 58’.—Allo, a cape on the coast of West Florida, in the gulf of Mexico. N. lat. 29° 54’. W. long. 89° 4’.

TURTLE RIVER, a river of the state of Georgia, which runs into the sea, N. lat. 31° 12’. W. long. 81° 42’.

TURTON, a township of England, in Lancashire, with 1782 inhabitants; more than half employed in trade and manufactures; 6 miles S. of Blackburn.

TURUCAI, a town of European Turkey, in Bulgaria, on the Danube. In 1773, it was taken and burned by the Russians; 34 miles S.W. of Drifta.

TURTUR, in Ornithology. See Columbia.

TURUB, in Ichthyology, a name given by Paulus Jovius, and some other writers, to the fish called the paffinaca marina.

Turtle, the Turtle-shell, in Natural History, the name given by the collectors of shells to a very beautiful species of murex, common in the cabinets, but not found anywhere on the shores. This is owing to its having greatly altered its appearance in polishing; for it is not other than the white and brown-mouthed murex, which is common in its rough state, with its outer coat taken off.

TURTURA, in Geography, a town of Naples, in Baficiana; 40 miles S. of Potenza.

TURURANO, a town of Naples, in the province of Otranto; 5 miles S. of Brindifi.

TURUCHAN, a river of Russia, which rises from a lake, N. lat. 6° 42’. E. long. 84° 14’, and runs into the Enifei, a little south of Turunchak.

TURUCHANSK, a town of Russia, in the government of Tobolaki, on the Enifei, formerly called “Mangafea.” According to an old tradition delivered down from father to son, a colony from Archangel built the old otfrog of Mangafea, before any other Russian town existed in Siberia. It derives its name from a Samoiedean tribe, who inhabited this country, calling themselves Mangafea; who, by promising to pay tribute to the Russians, occasioned the building of the town. Old Mangafea, which stood on the river Taz, gradually fell to decay; in 1668, the present town was built, and the inhabitants of the old otfrog were removed hither. This new otfrog was also called “Mangafea;” but as it lies at the mouth of the river Turukan, it had also the name of Turukankh, which it retains to this day. As this otfrog proved the means of several nations becoming tributary to the Russians, it was probably on that account afterwards endowed with the privileges of a town. The houses in this town are not contiguous, and at most do not exceed one hundred. The greatest part of it is included within a small wooden fortification, with four pieces of cannon; and in this stands the house of the governor or prefect, and the principal church; and without it are two other churches. Most of the inhabitants have always been Cossacks; who were placed here, in order to subdue, or at least to check, the Pagan nations of this country, particularly the Tungufians and Samoiedes; 724 miles N.E. of Tobolki. N. lat. 65° 40’. E. long. 88° 44’.

TURUNDA, a tent, so called in Surgery, is usually composed of a bit of lint rolled up, or else of a piece of common sponge, or prepared sponge. Its general use is to keep an
an opening from healing up too soon, in cases of abscesses, diseased bone, &c. Sometimes, also, it is used for dilating the aperture, by which means extraneous substances can be removed, without employing the knife. Tents have even been used for dilating the meatus urinarius, and thus enabling the surgeon to extract stones of considerable size from the bladders of female subjects.

TURUNGA, in Geography, a town of Hindoostan, in the circular of Rutnupour; 24 miles N. of Raypour.

TURZA, or TURCETA, in Ancient Geography, Boufia, a town of Africa, 6 leagues S.W. of Tunis, now a heap of ruins.

TURZEC, in Geography, a town of Lithuania, in the palatinate of Novogrodek; 24 miles E. of Novogrodek.

TURZO, TRUZE, in Ancient Geography, a town of Africa, mentioned by Ptolemy, situated eight leagues W. of Vicus Auguli.

'TURZONZA, a town of Mexico, in the province of Mexicoan, on the side of a lake; 25 miles W. of Mexicoan.

TUS. See Meschid.

TUSA, a town on the north coast of Sicily; 8 miles S.E. of Cefalu.

TUSANTLU, a town of Mexico, in the province of Mexicoan.

TUSBY, a town of Sweden, in Nyland; 15 miles N. of Helingfors.

TUSICA, the Zaine, in Ancient Geography, a river of Africa, which separated Africa Propria from Numidia. Pliny.

TUSCAN, in Architecture, the first, simplest, and most massive of the five orders.

The Tuscan order takes its name from the ancient people of Lydia, who, coming out of Asia to people Tuscany, first erected it in some temples, which they built in their new plantations.

Vitruvius calls the Tuscan the rustic order; with whom agrees M. de Cambray, who, in his Parallel, says, it ought never to be used but in country-houses and palaces. M. le Clerc adds, that in the manner Vitruvius, Palladio, and some others, have ordered it, it does not deserve to be used at all. But in Vignola's manner of composition, he allows it a beauty, even in its simplicity; and such as makes it proper not only for private houses, but even for public buildings, as in the piazzas of squares and market, in the magazines and granaries of cities, and even in the offices and lower apartments of palaces.

The Tuscan has its character and proportions, as well as the other orders; but we have no ancient monuments to give us any regular Tuscan pillar for a standard.

M. Perrault observes, that the characters of the Tuscan are nearly the same with those of the Doric; and adds, that the Tuscan is, in effect, no other than the Doric, made somewhat stronger, by shortening the shaft of the column, and simpler, by the small number, and largerness of the mouldings.

Vitruvius makes the whole height of the order 14 modules, in which he is followed by Vignola. M. le Clerc, &c. Serlio only makes it 12. Palladio gives us one Tuscan profile, much the same as that of Vitruvius; and another too rich; on which side Scamozzi is likewise faulty. Hence it is, that it is of Vignola, who has made the order very regular, is most followed by the modern architects. See Column.

Of all the orders, the Tuscan is the most easily executed, as having neither triglyphs nor dentils, nor modillions to cramp its intercolumns. On this account, the columns of this order may be ranged in any of the five manners of Vitruvius, viz. the pycnotyle, styliile, eufild, diafyle, or aracotyle. For the parts and members of the Tuscan order, their proportions, &c. see Capital, Base, Pedestal, Freeze, &c.

TUSCANY, in Geography, now called Etruria (which see), a grand duchy or kingdom, long celebrated for the arts; the capital of which is Florence, which see. Pinkerton states its length at about 160 British miles, and its breadth at 90; and its area of 7000 square miles as containing about 1,750,000 persons. The revenue is computed at about half a million sterling; but the forces do not exceed 5000 or 8000. Tuscany is one of the most beautiful and fertile regions of Italy, with a temperate and healthy climate. It abounds in corn and cattle, and produces excellent wines and fruit. The mountains in the Siene, or southern part of Tuscany, contain valuable ores of antimony, copper which is wrought at Mafia, and other metals, with slate and yellow marble. The herpetine of Impurcata, 7 miles S. from Florence, presents beautiful varieties used in ornamental architecture. Borax has been found in the lakes of Tuscany, near Sienna and Volterra. The Florentine marble is remarkable for picturesque representations of ruins, &c. caused by the infiltration of iron between the laminae. The river Arno receives many small streams; and the Ombrone is a considerable river which pervades the Siene.
in the evening, on account of the wild beasts. In this vale no single habitation is visible for near 15 or 20 miles. Jack-son's Journey from India, p. 120.

TUSULAN, in Matters of Literature, is a term which frequently occurs in the phrase Tusulan Questions. Cicero's "Tusulan Questions" are disputations on several topics in moral philosophy, which that great author took occasion to denominate, from Tusulum, the name of a country, seat, or villa, where they were composed, and where he lays the scene of the dispute.

They are comprised in five books; the first on the con-
tempt of death; the second of enduring pain; the third on afflicting grief; the fourth on the other perturbations of the mind; and the last, to shew, that virtue is sufficient to a happy life.

TUSULUM, in Ancient Geography, a town of Latium, at a small distance from Rome, towards the S.E. Its ori-
gin was referred to the time of Ulysses, whose son Teleagonus, by Circe, is said to have been its founder. Its inhabitants were distinguished for their courage, and placed themselves at the head of the allies in the war of the Latin people. It was afterwards subdued by Rome and became municipal. Its situation on a mountain and between the hills induced the rich inhabitants of Rome to select it as the site of their country-houses. It had a citadel of no less importance with regard to this city than the Capitol with regard to Rome. It had also an amphitheatre and aqueducts. It was afterwards denominated Priscati or Priscati, which fee.

TUSUM, or Thusum Mare, the name of a part of the Mediterranean sea, which washed the coasts of Etruria, as far as the coasts of Sicily.

TUSGEL, in Geography, a town of Asiatic Turkey, in Caramania; 42 miles N.W. of Cogni.

TUSHES, in the Mange, are the fore-teeth of a horse, seated beyond the corner teeth, upon the bars, where they shoot forth on each side of the jaws, two above, and two below, about the age of three, three and a half, and sometimes four; and no milk or real-teeth ever come up in the place where they grow. See Teeth.

TUSHETI, in Geography, a town of Asia, in Daghestan; 80 miles S. of Telif.

TUSIAGATH, in Ancient Geography, a town of Africa, in the interior of Mauritania Cafarimanda, according to Pto-
lemy.

TUSIS, in Geography, a town of the Helvetian republic, in the Grifons, on the Rhine. In 1759, it was taken by the French; 15 miles S. of Coire. N. lat. 46° 32'. E. long. 9° 30'.

TUSK, in Carpenterv, a bevel-shouder, made to streighten the iron of the joint, which is let into the girder.

Tusk, in Zoology, is used to denote the long tooth of a fighting animal; and in the name fenne with tuliphe, as applied to other animals besides horses.

TUSKAR, in Geography, a small island, or rather rock, off the coast of the county of Wexford, Ireland, forming a conspicuous object for mariners. N. lat. 52° 13'. W. long. 6° 10'.

TUSKAU, a town of Bohemia, in the circle of Pilfen; 6 miles N.W. of Tetsitz.

TUSKAWARA, a township of Mukiqum county, in the district of Ohio, containing 1151 inhabitants.

TUSO, in Ancient Geography, a river of India, on this side of the Ganges, into which it runs.

TUSPA, in Geography, a town of Mexico, in the province of Mechoaca; 25 miles N.W. of Colima.—Alfo, a town of Mexico, in the province of Tlascala, at the mouth of a river so called; 140 miles N.W. of Puebla of los Angeles.—Alfo, a river of Mexico, which runs into the gulf of Mexico, N. lat. 21° 28'. W. long. 98°.

TUSSER, John, in Biography. In Henry VIIIth's time, when music was more cultivated in England than it had ever been before, an arbitrary and oppressive power was given to the deans of cathedrals and collegiate churches, to imprefs children poiffessed of good voices, in order to supply their several choirs with chorillers. And John Tussler, the subject of this article, and the unfortunate author of the "Five Hundred Points of Good Husbandry," one of the most pleafant and instructive poems of the time, tells us, that he was imprefled from Wallingford college, in Berk-
shire, into the King's chapel. Soon after, by the interief of his friends, he was restored to St. Paul's, where he received instructions in music from John Redford, an excellent con-
trapuntift, and organift of that cathedral. There feems, howe'er, to have been care taken of the general education of boys so impreffed, as we find that Tussler was sent from St. Paul's to Eton school, and thence to Cambridge. He afterwards tried his fortune in London about the court, under the auspices of his patron lord Paget, who re-
mained ten years; then he retired into the country, and embraced the occupation of a farmer, in the several counties of Suffex, Suffolk, and Essex; but not prospering, he procured a finging-man's place in the cathedral of Nor-
wich; where he does not feem to have remained long before he returned to London. But being driven thence by the plague, he retired to Trinity college, Cambridge; return-
ing afterwards, however, to the capital, he there ended his reiiefs life in 1580; not, as has been faid, very aged, if he was born about 1523.

TUSEY, in Geography, the name of mountains of Penn-
svllyania; 10 miles N. of Huntingdon.

TUSSELAGO, in Botany, an ancient name, composed of tussis, a cough, and ago, to act upon, or cure; in alli-
ion to the reputed virtues of this herb, as a remedy for coughs and other pectoral diseases.—Linn. Gen. 423.


Gen. Ch. Common Calyx cylindrical, tumid at the bottom, of from fifteen to twenty linear-lanceolate, equal, somewhat membranous scales, the length of the dikk. Cor-
compound, various. Florets in fone all perfect, tubular, funnel-shaped, with an acute, four or five-cleft, reflexed limb, longer than the calyx; in others such florets are found in the dikk only. Female florets when prefent either ligu-
late, very narrow, undivided, longer than the calyx; or tubular, and rather longer than the perfect florets. Stam-
in the perfect florets, Filaments five, capillary, very short; anthers more or less united into a cylindrical tube. Pip-
Germen in the perfect florets, short; stye thread-shaped, longer than the stamens; stigma thickift, emarginate; in the female ones, Germen short; stye thread-shaped, the length of the former; stigma deeply divided, acute. Peric-
one, except the scarcely altered calyx. Seeds solitary, ob-
long, compressed, generally abortive in the florets of the dikk, or centre thereof. Down capillary, sometimes stalked. Recept. naked, dotted.

Eff. Ch. Receptacle naked. Seed-down simple. Calyx simple,
fades; according to Swartz's description it answers to the characters of this genus. Sed-down shining, with a reddish, or pink, hue.

3. T. punila. Dwarf Jamaica Colt's-foot. Swartz Ind. Occ. 1350. Willd. n. 6.—Stalk single-flowered, naked, downy. Flower radiated, erect. Leaves ovate, with reverted teeth; finated at the base; downy beneath.—Found on the lofty calcareous mountains of the fourth part of Jamaica, near Cold-spring, flowering in summer. Smaller than the last, to which it seems nearly allied; but the leaves, only an inch or two in length, are pinnatifid in a lyrate manner. Stalk mostly solitary, from three to six inches high, roundish, cottony; purplish in the lower part. Flower small, white; erect according to Willdenow, and the specific character of Swartz, though the latter calls it drooping in his description. Its structure is that of a Tussilago.

4. T. natans. Drooping Jamaica Colt's-foot. Linn. Sp. Pl. 1213. Am. Acad. v. 5. 406. Willd. n. 7. Ait. n. 1. Swartz Off. 305. (Leontodon n. 1; Browne Jam. 410. Dens leonis, folio fubitus incano, flore purpureo; Sloane Jam. v. 1. 255. t. 150. f. 2. After primula veris folio, flore singulari purpureo; Plum. Ic. 29. t. 41. f. 1.)—Stalk single-flowered, naked, cottony. Flower radiated, pendulous. Leaves falked, oblong-heart-shaped, wavy, toothed; cottony beneath; finated at the base.—Native of cultivated and grassy places in Jamaica. Swartz describes it as annual. Mr. Aiton marks it biennial, flowering in the fow and July. The much larger leaves, near a span long, pinnatifid in a lyrate manner, and the falks twelve or fifteen inches high, distinguish this species from all the preceding. The flower is pendulous, with a white disk and radius, but the slender points of the calyx-scales being tipped with purple, have, as it appears to us, been mistaken for a purple radius by Sloane, and even by the more learned professor Swartz. When in f pitched, the falk becomes erect. The down is rather tawny, or reddish.

5. T. trifurcatum. Three-forked Colt's-foot. G. Forster, Pl. Magell. 28. Willd. n. 8.—Stalk fingle-flowered, fally. Flower radiated, erect. Leaves fpatulate, with three or more oblong segments, fmooy.—Native of dry filty situations about the fronds of Magellan. Root perennial, somewhat tuberous. Leaves radical, tufted, an inch long, divided into three, four, or five, oblong, erect, finger-like segments, spreading, quite smooth and naked. Stalk from one to three inches high, round, clothed with awl-shaped fally branches. Flower white, with all the characters of its genus. Inner scales of the calyx large, with spreading horizontal points.

6. T. alpina. Alpine Colt's-foot. Linn. Sp. Pl. 1213. Willd. n. 9. Ait. n. 2. Jacq. Auctr. t. 246. Curt. Mag. t. 84. (T. alpina secundua; Cluf. Hift. v. 2. 113; A. Matthioli; Ger. Em. 836.)—Stalk fingle-flowered, with oblong scattered branches. Flower without leaves. Leaves kidney-shaped, toothed, smooth on both fides.—Native of the Alps of Switzerland, &c. flowering in June and July. The root is perennial, tuberous, and creeping, brown, with many long fibres. Leaves few, radical, falked, from one to two inches broad, bluntly toothed; quite smooth, and of a fining green, reticulated with depressed branching veins above; paler beneath, but equally smooth, except some hairs on the ribs or veins. Stalk solitary, a foot or more in height, erect, purplish, hairy, bearing a few fiant, variously faprated, conve, upright branches. Flower erect, half an inch broad. Calyx purple, smooth. Flores white, sometimes purplish, all regular and five-eflet, with purple anteras and fignum.

Tussilago.

247. Willd. n. 10. Ait. n. 3. (T. alpina 8; Linn. Sp. Pl. 1214. T. alpina prim; Chuf. Hift. v. 2. 112. T. alpina; Ger. Em. 812.) — Stalk single-flowered, nearly naked. Flower without rays. Leaves kidney-shaped, toothed, downy and white beneath. — Native of the Alps of Austria, Carniola, &c., growing along with the lad, and flowering at the same season. This is rather smaller than the preceding, usually with fewer bracteas. The under side of the leaves is clothed with dense white cottony down, which affords the most distinguishing mark of the plant, and is allowed by recent authors to prove it specifically distinct. Linnaeus thought it but a variety.

8. T. floeriras. Lobed Alpine Colt's-foot. Scop. Carn. v. 2. 157. Jacq. Auct. v. 5. Append. 33. t. 12. Willd. n. 11. — Stalk mostly single-flowered, with dilated scabrous bracteas. Flower without rays. Leaves smooth, kidney-shaped, many-lobed and toothed. — Native of mountainous, chiefly beech, woods of Styria, Carinthia, Carniola, &c., flowering in May. Allied to T. alpina, with which its synonyms have been confounded by Scopoli, Haller, and even Jacquin; but the leaf has the merit of subtilely distinguishing this very well-marked species. It is larger than alpina, and the flum sometimes bears two or three flowers, fearfully differing from those of alpina or discolor. The bracteas however are broader, often terminating in a leafy appendage, particularly the lower ones. The radical leaves are very different, being cut into about seven rather shallow lobes, of which the middle ones more especially have about three pointed teeth. The upper surface is green, sometimes roughish to the touch, thinly marked with veins; the under paler, peculiarly smooth and even, a little shining. We have not heard of this plant in any British garden, nor had Linnaeus a specimen.

9. T. Farfara. Common Colt's-foot. Linn. Sp. Pl. 1214. Willd. n. 12. Fl. Brit. n. 1. Engl. Bot. t. 429. Curt. Lond. falc. 2. t. 60. Woodv. Med. Bot. t. 13. Bulliard Herb. de la Fr. t. 329. Fl. Dan. t. 195. (Tussilago; Ger. Em. 811. Math. Valgr. v. 2. 198. Camer. Epit. 590, 591.)— Stalk single-flowered, fealy. Flower radiated. Leaves heart-shaped, angular, toothed; downy beneath. — Native of moist chalky shady situations, throughout Europe, flowering in March or April, before the leaves appear. Dr. Sibthorp met with it about rolls and inundated places in Greece, nor can there be any doubt of our Colt's-foot being the 2x, of Dioecoides, of which Farfara, see that article, is an ancient synonym. The roots of this species are perennial, creeping to a great extent. Stalks five or six inches high, erect, simple, downy, clothed with numerous, alternate, ovate, erect, purplish, nearly smooth scales, three-quarters of an inch long. Flower drooping before it expands, then erect, yellow, an inch broad; the radius of very numerous, long, narrow, spreading, ligulate flores, which Dr. Stokes has observed to be the only ones that ever perfect their seed. Indeed the plant increases so much by root that fearfully any seeds are ever ripened. The flores come forth on erect footstalks, after the flowers and their flakks have withered, and are from three to fix inches wide, sharpen toothed; very smooth, and rather glaous, above covered beneath with dense, white, cottony down. They are mucilaginous and astrangent, slightly bitter, and are recommended either in infusion, or smothered like tobacco, as a curst for coughs. The latter mode of application is advised by Dioecoides in difficulty of breathing, dry cough, &c. and he prefers these leaves bruised, with honey, as an external remedy for erysipelas, and other inflammations of the skin. The cottony web of this herb serves extremely well for tinder, and to staunch the blood of flight wounds. — Willdenow says there is a variety with perfectly smooth leaves.

10. T. japonica. Japan Colt's-foot. Linn. Mant. 113. Willd. n. 15. Thunb. Jap. 313. Banks fc. Kämpf. t. 27, 28. (Arnica tussilaginis; Burm. Ind. 182. Doro- nium tussilaginis folio, &c.; Phil. Amath. 71. t. 390. f. 6. Tiza; Kämpf. Am. Exot. 827.) — Stalk with several radiated flowers, corymbose, bracteated. Leaves roundish-heart-shaped, toothed; slightly downy beneath. — Native of Japan, flowering in October. Root perennial, tuberous. Stalks twelve or fifteen inches high, angular, furrowed, reddish, downy in the upper part, bearing a few scattered fealy bracteas, and terminating in from five to eight large yellow radiated flowers, on downy alternate partial flakks. Rays wedge-shaped. The feed-down is fensitive, like the last. Leaves coming after the flowers, on long upright foot-stalks; their breadth three or four inches; length much less. But their side paler, but scarcely downy. The root, according to Thunberg, is bitter, and esteemed a counter-poiion by the Japanese. Kaprefays the flakks are used as a pot-herb.

11. T. frigida. Lapland Colt's-foot. Linn. Sp. Pl. 1214. Fl. Lapp. ed. 2. 246. Willd. n. 14. Ait. n. 5. Purii n. 1. Fl. Dan. t. 61. (T. n. 128; Gmel. Sib. v. 2. 150. t. 70.) — Stalk with many radiated flowers, corymbose, bracteated. Leaves triangular-heart-shaped, with deep triangular teeth; downy beneath. — Found by Linnaeus plentifully in woods and pastures among the Lapland Alps, flowering towards the end of May, and featurering its seeds about a month afterwards. It occurs likewise in Norway and Siberia, as well as, according to Mr. Purii, in Canada, and on the highest peaks of the Vermont and New Hampshire mountains, at the same season. The root is somewhat tuerous and creeping, though less flaky than the last, with copious long fibres. Leaves and flowers appearing nearly together, on stalks about equal in height, from ten to fifteen inches; the former remarkable for their very large angular teeth. The flower-stalk bears several alternate, large, true, smooth bracteas, sometimes ending in a small leaf. Flowers white; the floret's of the dill tinged with pale purple, especially their large, club-shaped, hairy, prominent, but we believe unleafy, ficnmat. Sed-down fensitive, above an inch long, flaky.

12. T. fragrant. Sweet-scented Colt's-foot. Villars Actes de la Soc, d'Hift. Nat. de Paris, v. 1. 72. t. 12. Willd. n. 15. Ait. n. 6. Curt. Mag. t. 1388.—Stalk panicked, level-topped, somewhat leafy. Flowers radiated. Leaves roundish-heart-shaped, obtuse, equally and finely toothed; rather hairy beneath. — Native of the neighborhood of Naples, and of Sicily near Palermo; introduced into England by Mellers. Lee and Kennedy in 1806. It flowers in the winter, or early spring. The leaves, which are green on both sides, rounded, obtuse, not at all lobed or cut, appear with the flowers. The latter are large, fragrant like Heliotropium peruvianum, with broad light-purple rays, and a white dish, the timid stigma of whole floret is dark-purple. The panicule is compound, rather dense; its stalk taller than the foliage, clothed with very large inflated bracteas having leafy terminations.

13. T. levigata. Smooth Straw-coloured Colt's-foot. Willd. n. 16. (T. cepa imbricato, floribus epicaulis radiatis, folis utrinque glaberrimis; Gmel. Sib. v. 2. 148. n. 126.) — Stalk panicked, level-topped. Flowers radiated. Leaves heart-shaped, acute, slightly angular, toothed, smooth on both sides. — Abundant about the banks and sloughs of rivers in Siberia, flowering in spring, at which time all but the flowers is generally under water. Gmelin. * Root flaky, purplish,
pulviform, creeping to the extent of many feet, with many long, thick, simple fibres. Leaves about two inches broad at the flowering period, but when fully grown, eighteen inches in diameter; bright green and smooth on both sides, pulviform at the edges, fleshy; copiously veined beneath; their margin irregularly and sharply toothed, sometimes angular. Footstalks smooth, a foot or more in length. Flower-flats taller than the leaves, thick, succulent, reddish, fluted, slightly cottony, bearing many large, inflated, sheathing bracteas; and terminating in a more or less compound, level-topped, or corymbose, panice, whose downy flats are furnished with many smooth, linear-lanceolate, flat, much smaller bracteas. Flowers from eight to twenty, scarcely half an inch broad, straw-coloured, with shortish rays. Wildenow's opinion of this being a very distinct species, is confirmed by Gmelin's own figments in the Linnaean herbarium; which also, unless we are greatly mistaken, flew n. 127. t. 69. D, E, of the same author, to be the very same plant, totally different from the common T. petasites, with which he compares it, in many other points besides the colour of the flowers.

14. T. alba. White Col's-foot, or Double-toothed Butter-burr. Linn. Sp. Pl. 1214. Willd. n. 17. Ait. n. 7. Fl. Dan. t. 524. Petasites flore albo; Camer. Epit. 593. P. n. 119; Hall. Hist. v. 1. 61.—Panicle dense, level-topped. Flowers without rays. Leaves roundish-heart-shaped, doubly and sharply toothed; white and shaggy beneath.—In mountainous woods, and about the banks of rivers, in the alpine parts of Europe, not rare in Switzerland, but unknown as a native of Britain. It appears to have been cultivated at Edinburgh in the time of Sutherland, 1683, and we obtained a specimen from the botanic garden there 100 years after, under the erroneous name of T. hybrid. This is a large species, distinguished from all the rest, of those which bear many flowers on a stalk, by its strongly, doubly, and acutely-toothed leaves; quite smooth above; very veiny and cottony beneath, when young, but afterwards the pubescence of that side becomes more grey, shaggy, and loose. The tall downy flower-flats bear a great number of broad, concave, rather cottony bracteas, and terminate in a branched many-flowered corymbose panice. The flowers are rather small, snow-white, without rays. Down felise. Wildenow and other botanists have observed, that some individual plants have but very few, and others many, female florices, in comparison to those furnished with both flowers and pistils; but the author just named has been missed by Villars to cite, as the female plant of this species, Gmelins's t. 69. f. D, E, which has yellow flowers; see our n. 13.

15. T. nivea. Snowy Col's-foot, or White-leaved Butter-burr. Villars Actes de la Soc. d'Hill. Nat. de Paris, v. 1. 73. t. 12. f. 2. Willd. n. 18. Ait. n. 8. (T. frigida; Villars Dauph. v. 3. 175. T. paradoxo; Retz. Obl. f. 2. 24. t. 3. Petasites n. 141; Hall. Hist. v. 1. 62. P. minor, tutfallaginis folio; Moris. f. 7. t. 10. f. 4.)—Panicle dense, rather obtone. Flowers without rays. Leaves triangular-heart-shaped, finely toothed, with spreading, angular, cottony lobes; densely downy beneath.—Native of the mountains of Switzerland, Germany, Dauphiny, &c. flowering in April. Differs from the last in the snowy whiteness, and dense pubescence, of the under side of the leaves, as well as in their triangular form, and their simple series of marginal teeth. Flowers pale flesh-coloured. Common flat clothed with similar large bracteas. Seed-down near an inch long. The female plant, termed paradoxo, as a distinct species, by Retzius, has but about three apparently perfect florices in each calyx, and of these the anthers are unconnected. In a remark on the faxes of this tribe of plants, at p. 431 of Engl. Bot. T. alba is inadvertently mentioned for nivea.


T. hybrid; Linn. Sp. Pl. 1214. Fl. Brit. n. 2. Engl. Bot. t. 430. (Petasites major, floribus pedunculis longis infundibulis; Willd. Etr. 509. t. 230. P. n. 140; Hall. Hist. v. 1. 61.)—Panicle dense, ovate-oblong. Flowers without rays. Leaves roundish-heart-shaped, unequally toothed, slightly angular, with rounded converging lobes; paler and somewhat shaggy beneath.—Native of moister, boggly, shady meadows, the borders of rivers, pools, &c. throughout Europe. Dr. Sibthorp found it in Greece, but not common, except in rather mountainous, as well as watery situations. There can, however, be little doubt of this plant being, as all botanists have thought, the Petaetis floribus pedunculis longis, infundibulis, of Diederich. Our B grows with the common kind, though far less frequently. Both flower in April, before the leaves expand, and, are, of course, perennial. The root is thick and fleshy, creeping very far, and hard to be extinguished. Stalk a span high, thick, downy, clothed with oblong roundish bracteas, partly leafy at their extremity, and terminating in a dense ovate panice, of pale dully flesh-coloured flowers. The florices are all tubular, furnished with united red anthers and a thick cleft stigma. The younger Linnaeus, and Haller, have detected a few female ones, laid to afford good food; but many botanists have remarked that the Common Butter-burr never perfects seed, nor does even its seed-down make a very conspicuous appearance. T. hybrid, which we have marked as a variety, because its leaves are rather smaller, and the panicle rather longer, with smaller flowers, is allowed to be the female plant, or at least an individual in which that sex prevails. In this mode the florets are female, with a slender calix, and a taper, acute, efficient stigma. One or two of the central ones only are male, having separate anthers, and a thick ulefs stigma. The panicule when in seed is much elongated, and becomes cylindrical, conspicuous for its copious, brilliant, though short, seed-down, forming an elegant silvery plume, a foot or more in length. The leaves of the common T. Petasites are the largest of any British plant, being often three feet broad. They are grey or hoary beneath, far less white than those of T. nivea, as well as more rounded, and with their lobes approaching each other.

17. T. spuria. Cloven-lobed Butter-burr, or Col's-foot. Retz. Obl. f. 2. 29. t. 2. Willd. n. 20. (T. tomen-tosa; Ehrh. Beitr. v. 3. 65.)—Panicle corymbose. Flowers without rays. Leaves triangular-heart-shaped, finely and acutely-toothed, with spreading, angular, cottony lobes; densely downy beneath.—Native of Lapland, Scania, and Germany, about the banks of rivers. The general outline of the leaves, with their spreading acute lateral lobes, is most like nivea, n. 15, but those lobes are remarkable for being always divided, or double. The marginal teeth of the whole leaf are also more numerous, crowded, regular, and smaller, as well as more obtuse, than in nivea; the soft, cottony, very white downieaves of the under side nearly accord with those species; the upper is green, and quite smooth, except when young. Flowers corymbose, rather than panicled, cream-coloured, with linear bracteas. Authors have distinguished two varieties; one with a more short dense inflorescence, and only three female florices, all deficiente.
destitute of a corolla, which is Ehrhart's tementosa; the other with a more elongated corystb, and numerous female florets, each with an oblique tubular corolla, but whose fligma nevertheless is said to be small and barren; this is the original Paradossa. We presume the idea of the barren fligma may be a miftake of Retzius; that part, when imperfect, being, in this tribe of plants, always thickened; but we have had no opportunity of examining living specimens of T. spuria, which is a stranger to the gardens of England.


19. T. palmata. Cut-leaved Colt's-foot. Ait. n. 10. ed. 1. v. 3. 180, t. 11. Wild. n. 21. — Flowers corymbbose, level-topped, radiated. Leaves seven-lobed, palmate, cut; downy beneath. — Native of Newfoundland and Labrador. Introduced into England by Dr. Fothergill, in 1777. Perennial, flowering in April. The flalk and inflorescence resemble the leaf. The flowers are light flesh-coloured, or purplish, with short obtuse rays. The leaves, which with Wildenow's account vary in the depth of their lobes, afford a clear specific difference from all the other species.

Tussilago, in Gardening, comprehends plants of the low, hardy, herbaceous, creeping-rooted perennial kinds; among which, the species most commonly cultivated in gardens for different purposes are, the common tussilago or colt's-foot (T. farfara); the mountain colt's-foot (T. alpina); the Sibcrian colt's-foot (T. anandra); the pectafltes, tussilago major, or common butter-bur (T. pectafltes); the hybridan German tussilago, greater colt's-foot, or long-flalked butter-bur (T. hybridus); and the white alpine tussilago, or smaller butter-bur (T. alba).

The first fort has a creeping perennial root, short, thickish flalk, with fine roundish hoary leaves; which are produced after the item and flower; hence it is denominated one of the flus ante patriat, or on before the father, tribe or clafs of plants, or thofe in which the flowers rise before the leaves.

It is not much cultivated in the garden manner, except in herbaceous collections as a medicinal herb for making decoctions and other mild balsamic drinks, and for the use of its leaves as a principal ingredient in the preparation of the Britifh herb tobacco, and other similar compositions. Sometimes, however, it is employed for variety in patches in the borders and other parts of ornamented grounds.

In the second kind, there is a variety which has round hoary leaves.

The fourth fort is also sometimes cultivated and employed as a medicinal plant in different intentions.

Method of Culture. — They are all capable of being raised and increafed by fowing the seeds of them in any proper and fuitable foil and situation in the early spring fefon, but not to too great a depth, when they will freely raise and become good plants. But the belt and moft expedifion method is that of parling the roots and planting them, which may be done either in the autumnal or spring fefon, when the smallfle flip will readily take root and grow, multiplying in a very quick manner.

Most of the farts poifef the fingular property of producing and fending up their flowers and flalks before the leaves are formed and seen.

The plants mostly affect rather moist soils and situations, but they will grow and succeed almost any where, and may be employed for affording greater variety and ornament, as well as some of them for the purpofes and intentions which have been fuggetted above.

Tussis. See Cough.

Tusslen, in Geography, a town of Bavaria; 4 miles W.S.W. of New Oeting.

Tut, in Armoury, &c. an imperial enflign of a golden globe, with a crofs on it.

Tut Bargain, among the Miners, denotes a bargain by the lump; as when they undertake to perform a piece of work at a fixed price, however it may prove.

Tutcorin, or Tuttocorn, in Geography, a town of Hindooftan, in the Carnic, where the Dutch have a factory; 25 miles E. of Palamcotta.

Tutary, a town of Sweden, in the province of Smal land; 24 miles W. of Wexio.

Tutbury, or Stutesbury, a market-town in the hundred of Offlow, and county of Stafford, England; is situated on the western bank of the river Dove, at the distance of 4 miles N.W. by N. from Burton-upon-Trent, and 134 miles in the same bearing from London. It was erected a free borough at an early period, and the burgesses and other inhabitants were invested with a variety of privileges and immunities; but never had the right of sending members to parliament, though the town still retains the appellation of a borough. The parish-church is an ancient and spacious edifice, with a square embattled tower surmounted by four small pinnacles; its principal entrance is decorated with fine specimens of Saxon sculpture. A free school was founded and endowed by Richard Wakefield in the year 1750; it was rebuilt in 1789. Here is also a meeting-house for Diffenters. According to the population return of the year 1811, the parish of Tutbury contained 242 houses, occupied by 1235 persons. Wool-combing constitutes the principal businefs of the inhabitants; and a cotton manufacture, recently established, gives employment to a considerable number. Three fairs are held annually, and a market weekly, on Tuesdays. On the north side of the town are the remains of the castle of Tutbury, which was erected soon after the Conquest, by Henry de Ferrars, a noble Norman, to whom the Conqueror gave large eftates in this county. In the family of Ferrars it continued till the reign of Henry III., when, being forfeited by the attaintor of Robert de Ferrars, earl of Derby, the king granted it to his second son Edmund, earl of Lancaster. It again reverted to the crown, in conseqienee of the rebellion of Thomas, earl of Lancaster, who fortified it against Edward II., but was obliged to surrender. Having sustained considerable damage during this contest, and being afterwards fuffered to fall into decay, John of Gaunt rebuilt the greater part of it upon the ancient feite in 1350. This castle, being the principal seat of the dukes of Lancaster, was long distinguished as the scene of much feditious and splendour. So great was the number of miniftrles retiring to it, that it was found necefary to adopt special regulations for the prefevation of order. Accordingly, one of their body was invested with the title of king of the miniftrles, with officers under him for the due execution of the laws. A charter for that purpofe was granted by John of Gaunt in 1381: and a court was eftabflihed for determining all controversy connected with miniftrelly. At this court, which was annually held with great formality, the king and his officers were appointed for the year ensuing; and the business of the day concluded with a bull-running and baiting. This barbarous custom was abolished, by commutation, about the middle of the last century; but the court still continues to be held. Tutbury castle was twice the residence, or rather prinif, of Mary queen
queen of Scots; in 1568, and again in 1585. At the commencement of the civil war in the reign of Charles I. it was garrisoned by Lord Loughborough, a zealous supporter of the royal cause; but was besieged and taken by Sir William Breton, one of the parliamentary commanders. The damage sustained by the castle on this occasion was very great; but it was not doomed to total destruction till 1646, when, by order of the parliament, it was reduced nearly to its present ruinous condition. What still remains, sufficiently declares its former extent and grandeur; the ancient gateway is tolerably entire; and towers, staircases, divisions of rooms, and fire-places, can yet be discovered in different parts of the walls, which appear to have been of immense strength and thickness: the whole was surrounded by a broad and deep ditch, over which, Dr. Plott informs us, there was in his time an extraordinary timber-bridge, composed of distinct pieces of wood, none of them above a yard long, yet unsupported by any arch-work, pillars, or other prop. Coeval with the castle, and founded by the same person, was a Benedictine priory, largely endowed by King William Rufus. The site was granted by Edward VI. to Sir William Cavendish. Scarcely a vestige of the ancient building is now left, and we know little more of its structure, than that it was of large extent, and contained a splendid monument to the memory of the founder. A portion of the old priory church constitutes a part of the present parish-church.—Description of the Castle and Priory of Tutbury, 8vo. 1786. Beauties of England and Wales, vol. xiii. Staffordshire, 1814.

TUTELA, in Ancient Geography, a town of Spain, in Celtiberia, according to Martial.

TUTELA, in Mythology, a goddess worshipped at Bourdeaux, of which city she was patroness, and where she had a magnificent temple. She is supposed by learned antiquaries to have been a divinity peculiar to sailors and merchants, who trafficked upon the rivers, as it was a common practice to put upon their ships the figures of certain gods, who gave names to them, and were called by the ancients "Tutela Navis," the tutelar divinity of the ship.

TUTELARY, Tutelar, one who has taken something into his patronage and protection.

It is an ancient opinion, that there are tutelary angels of kingdoms and cities, and even of particular persons, called guardian angels.

The ancient Romans, it is certain, had their tutelary gods, whom they called Paterae; which see. And the Romish church to this day, hold an opinion not much unlike it; they believe that every person, at least every one of the faithful, has, from the time of his birth, one of those tutelary angels attached to his person, to defend him from all temptations; and it is on this, principally, that their practice of invoking angels is founded.

F. Antony Macedo, a Portuguese Jesuit of Coimbra, has published a large work in folio on the tutelary saints of all the kingdoms, provinces, and great cities of the Christian world; "Divi Tutelarum Orbis Christiani," at Lisbon, 1678.

TUTELINA, or Tutilina, in Mythology, the goddesses of corn, who had the care of it when deposited in the granary. She had a chapel on the Aventine mount, and a statue in the Circus.

TUTENAG, a name given in India to the semi-metal zinc. It is also sometimes applied to denote a white metallic compound, brought from China, called also Chinefs, or white copper, the art of making which is not known in Europe. It is the best imitation of silver which has been made: it is very tough, strong, malleable, may be easily cast, ham-mered, and polished; and the better kinds of it, when well manufactured, are very white, and not more disposed to tarnish than silver is.

Three ingredients of this composition may be discovered by analysis, viz. copper, zinc, and iron. See Alleys of Copper.

TUTESERAI, in Geography, a town of Hindoostan, in Lahore; 14 miles E.S.E. of Sultanpur.

TUTIA, or Tuttia, in Ancient Geography, a town of Hither Spain.

TUTICUM, a town of Italy, in Samnium, called in the Itinerary of Antonine, "Equus Tuticus."

TUTLING, in Geography, a town of Bavaria; 10 miles N. of Paffau.

TUTOR, in the Civil Law, is one chosen to look to the person and estate of children left by their fathers and mothers in their minority. See Guardian. By the custom of Normandy, the father is the natural tutor of his children. A person nominated tutor, either by testament, or by the relations of the minor, is to decline that office if he have five children alive; if he have any other considerable tutorage; if he be under twenty-five years of age; if he be a priest, or a regent in an universit; or if he have any law-fuit with the minors, &c.

The marriage of a pupil, without the consent of his tutor, is invalid. Tutors may do any thing for their pupils, but nothing against them; and the same laws which put them under a necessity of preferring the interest of the minors, put them under an incapacity of hurting them. See Parent.

TUTOR, Honorary. See Honourary.

Tut is also used in our universities for a member of some college or hall, who takes on him the instruction of young students in the arts and faculties.

TUTORAGE, Tutela, in the Civil Law, a term equivalent to guardianship in common law, signifying an office imposed on any one, to take care of the person and effects of one or more minors. See Guardian.

By the Roman law there are three kinds of tutorage. Tectoritary, which is appointed by the father's testament. Legal, which is given by the law to the nearest relation. And dative, which is appointed by the magistrate.

But in all customary provinces, as France, &c. all tutorages are dative and elective; and though the father have by testament nominated the next relation to his pupil, yet is not that nomination of any force, unless the choice be confirmed by that of the magistrate, &c.

By the Roman law, tutorage expires at fourteen years of age; but in France, not till twenty-five years. A minor quits his tutorage, and becomes free by marriage; in which case a curator is given him.

TUTOVA, in Geography, a river of Moldavia, which runs into the Birlat, 4 miles S. of Birlat, in the province of Moldavia.

TUTSAN, in Botany. See Hypericum.

TUTTI, in the Italian Music, is used to signify that all the parts are to play together, or to make a full concert.

In this sense, tutti stands opposed to falso or falso. It is often found expressed by omnes, ripieno, chorus, &c.

Tutti, in Geography, a town of Bengal; 13 miles N.N.E. of Burwa.

TUTTLINGEN. See Duttlingen.

TUTTUM, a town of Hindoostan, in Bundelcund; 20 miles N.E. of Chatterpour.

TUTTY, Tutia Alexandrina, or Lapis Tutia, an argil-laceous ore of zinc, found in Persia, formed on cylindrical moulds into tabulous pieces, like the bark of a tree, and baked
baked to a moderate hardmess. This account of its original is supported by the authority of Teixeira and Douglas, and by its chemical properties. That the common opinion of its being a sublimable produced in the European foundries, where zinc is melted with other metals, is erroneous, appears from hence, that tatty is not found, upon strict enquiry, to be known at those foundries; and by its confounding, in a great part, of an earth not capable of rising in sublimation. This, however, is probably, that sublimates, or the common ores of zinc, are often mixed with argillaceous earths, and baked hard, in imitation of the genuine oriental tatty.

Bonitus, in his animadversions upon Garcia ab Ord, informs us, that it is made of a glutinous or argillaceous earth, like clay, found in great quantities in a province of Perâa, called Kirmann, which the Indians, who gather it, put into earthen pots made on purpose, and, adding water to it, flit it with a stick: these pots are then placed in furnaces till the water is evaporated; afterwards removing the dregs which remain at the bottom, they pick off from the sides of the pots the calcined earth or tatty, which they carefully preserve for sale. He adds, that it is used in India as a cosmetic for destroying hair, more especially by the women, when they bathe.

Tatty is generally of a brownish colour, and full of small protuberances on the outside, smooth and yellowish within, sometimes whitish, and sometimes with a blueish tuff. Like other argillaceous bodies, it becomes harder in a strong fire; and after the zinc has been revived and digested by inflammable additions, or extracted by acids, the remaining earthy matter affords with oil of vitriol, an albumous salt.

Tatty, levediated into an impalpable powder, is, like the laps calaminaris and calcines of zinc, an useful ophthalmic, and frequently used as such in ointments and collyria.

Ointments for this intention are prepared in the shops, by mixing the levediated tatty with so much viper's fat as is sufficient to reduce it to due consistence, or, by adding one part to five parts of a simple limiment made of oil and wax. See Zine.

TUTUCAC, in Geography, a town of Mexico, in the province of Hiaqui; 100 miles E. of Riochico.

TUTULUS, among the Romans, a manner of dressing the hair, by gathering it up on the forehead into the form of a tower.

TUTUS likewise signifies a woollen cap with a high top.

TUTURA, in Geography, a town of Russia, in the government of Irkutsk, on the Lena; 160 miles N. of Irkutsk. N. lat. 54° 40'. E. long. 105° 44'.

TUTUS, in Ancient Geography, a town of Egypt, between Talmas and Piescis. Anton. Itin.

TUVE, in Geography, a lake of Norway, about 20 miles in circumference; 52 miles from Christiansand.

TUXAL, a town of Hindoostan, in the circar of Sirkind; 60 miles N.E. of Sirkind.

TUXFORD, a small market-town in South Clay division of the wapentake of Baffetlaw, in the county of Nottingham, England; is situated 24 miles N.E. by N. from the county-town, and 138 miles N. by W. from London. It was destroyed by fire September 8, 1702; consequently its appearance is more modern than that of many other towns in the country. Great part of it consists of farm-houses; agriculture being the chief employment of the inhabitants. Scarcely any trade is carried on here, except in hops, of which a considerable quantity is raised in this and the adjacent parishes. A fair for this article is annually held in September; and another in May for cattle, sheep, pigs, and poultry.

A weekly market on Mondays is well supplied in proportion to the population of the parish; which, in the return to parliament in the year 1811, is rated to be 841, occupying 157 houses. The church is an ancient structure, and consists of a nave, side-aisles, and chancel; with a spire. It contains the mutilated remains of monuments and other sculpture of a remote period. A rude representation of St. Laurence on a gridiron is still entire; one man is employed in blowing the fire, another is turning the faint with tongues, and a third appears to be a preacher, or director. A free grammar-school, still in high repute, was founded, and liberally endowed, by the will of Mr. Charles Read, dated the 30th of July, 1699. A manuscript copy of the regulations, as contained in the will, is preserved in the British Museum.—History of Nottinghamshire, by J. Thropey. 3 vols. 4to. 1797. Beauties of England and Wales, vol. xii. Nottinghamshire.

TUXIUM, in Ancient Geography, a town of Italy, and capital of Samnium. When Fabius Fabricianus pillaged this city, he removed the statue of the victorious Venus, worshipped here, to Rome. Plutarch.

TUY, in Geography, a town of Spain, in Galicia, situated on a mountain, near the north side of the Minho, opposite Valencia, in Portugal; the seat of a bishop, suffragan of Compostella. In a war between Spain and Portugal, this is one of the places of rendezvous for the Spanish troops; 50 miles S. of Compostella. N. lat. 42° 3'. W. long. 8° 37'.

Tuy, a navigable river of Caraccas, which discharges itself into the ocean, 30 leagues E. of the port of Guayra. It rises in the mountains of San Pedro, 10 leagues from Caraccas, and being joined by the Guayra, becomes navigable, and serves for the transportation of produce, abounding in the valleys of Aragoa, Tucata, Cua, Sabana, Ocupara, St. Lucia, and St. Thertha, through which it paffes, and particularly cacao, which is here of the best quality.

TUYU, a country of South America, in Patagonia, to the south of the vicerey of Buenos Ayres.

TUZ-KURMA, a town of Cashibtan; 50 miles S.S.W. of Sherezur.

TUZLA, a town of Asiatic Turkey, in Caramania, situated at the western extremity of a lake, to which it gives name. The lake is 36 miles in length, and about 4 in breadth; 28 miles N. of Cogni.—Alio, a town of Asiatic Turkey, in Natalia; 24 miles E. of Constantinople.

TWAGGER, a town of Sweden, in the province of Halland; 28 miles N.W. of Halmstad.

WIAITE, in Ichthyology. See Shad.

WIAITE, in our Old Writers, a wood grubbed up and converted into arable land.

TWA-NIGHTS GESTE, in our Ancient Customs. See Third-night awen Hynde.

If the twa-night's gelt did any harm to any, his hoft was not answerable for it, but himself.

TWARDONICE, in Geography. See TURNITZ.

TWASHTA, or TWASHI, in the Mythology of the Hindoos, a name of the fun, or of its regent Surya. The name occurs as of the sun in the article SARASWATI. Other legends make Twasha the parent of Suranath, one of Surya's wives. In some points he corresponds with Vulcan, or Dædalus; being profoudly skilful in the mechanical arts, and hence defined in gratitude for his useful invention. He seems to be the same personage with Vifwakarma; being, like him, called the "chief engineer of the gods." Mr. Wilford's learned Effay on the sacred isles of the Well, in the
TWEEDMOUTH, a sea-port of England, in the county of Durham, separated only by the Tweed from Berwick. In 1811 the number of inhabitants was 3917.

TWEEING, an operation in weaving, which is performed by multiplying and varying the number of leaves in the harnesses; by the use of a back harness, or double harnesses; by increasing the number of threads in each fillet of the reed; by an endless variety of modes in drawing the yarns through the harnesses; and by increasing the number of tredles, and changing the manner of treading them. When the number of tredles requisite to raise all the variety of sheds necessary to produce very extensive patterns would be more than one man could manage, recourse is had to a mode of mounting, or preparing the loom, by the application of cords, &c., to the harnesses; and a second person is necessary to raise the sheds required, by pulling the strings attached to the respective leaves of the back harness, which are func to their first position by means of leaden weights underneath.

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This is the most comprehensive apparatus used by weavers for fanciful patterns of great extent, and it is called the drawloom. In weaving very fine silk trowsers, such as those of thirteen leaves, the number of threads drawn through each interval of the reed is so great, that, if woven with a single reed, they would obstruct each other in rising and falling, and the shed would not be sufficiently open to allow the shuttle a free passage. To avoid this inconvenience, other reeds are placed behind that which strikes up the weft; and the warp threads are so disposed, that those which pass through the same interval in the first reed are divided in passing through the second, and again in passing through the third. By these means the obstruction, if not entirely removed, is greatly lessened.

In the weaving of plain thick woolen cloths, to prevent obstructions of this kind, arising from the clomenets of the warp, and roughness of the threads, only one-fourth of the warp is sunk and raised by one reed, and a second is prefixed down to complete the shed, between the times when every shot of weft is thrown across. See Weaving.

TWELFTH-FIND, in our Ancient Customs, imports much the same with ibane.

Among the English Saxons, those who were worth 1200s. were called 'twelve-hinds'; and if any injury was done to them, satisfaction was to be made accordingly. See Hinden.

TWELFTH-DAY, or Twelfth-tide, the festival of the Epiphany, on the manifestation of Christ to the Gentiles, so called, as being the twelfth-day, exclusive, from the Nativity, or Christmas-day.

TWELVE MENS, duodecim homines legales, otherwise called jury, or inquisitor, is a number of twelve persons, or upwards, as far as twenty-four; by whole oath, as to matters of fact, all trials pass, both in civil and criminal cases, through all courts of the common law in this realm. See Jury.

TWELVE TABLES, Laws of the. See Table.

TWELVE APOLLOSES, in Geography, a number of small islands at the west extremity of the Straits of Magellan, on the coast of Terra del Fuego, between Cape Pillar and Cape Descaida.

TWELVE ISLES, or Twelve Apolloises, islands on the south side of lake Superior.

TWELVE PINS, The, or Beannabola, a vaft ridge of almost perpendicular rocks in the western part of the county of Galway, Ireland, called Cunnemara. These mountains belong to the primitive formation.

TWELVE-MILE CREEK, a river of South Carolina, which runs into the Saluda, N. lat. 34° 50'. W. long. 81° 16'.

TWELVE-MONTH, the space of a year, according to the calendar months.

TWENTE, in Geography, a district of the flate of Overfijl, of which Oldenzel is the capital.

TWENTY-FOUR MENS, men chosen every half year to redrefs the grievances of the mines and miners; but every man generally ferves his year when chosen.

TWENTY-MILE CREEK, in Geography, a branch of the river Tombighe, in Georgia.

TWICE-LAID CORDAGE, is made of cast rigging, as throids, flays, mooring and other cables, which, if not much worn, will make good ropes, &c. for many purpofes, as small cable-laid ropes for warbing ships, worming and woolding for cables, worming for large flays, netting for ships' sides, &c.; ratings, scaffolding-ropes, spun-yarn for feizes, &c.

To open a cable for making it into small ropes, hang the frand
frond upon three hooks in the tackle-board, stretch it out
tight upon the hooks in the fledge, and heave till they are
untwisted; then draw out the yarn.

When the yarn of this worn fluff is overhauled, a little
thin tar should be poured upon it, which will make it pliable,
and lie better. The yarn unfit for knotting will pick into
oakum for caulking.

TWICKENHAM, in Geography, an extensive and pop-
ulous village in the hundred of Isleworth, and county of
Middlesex, England; is situated on the banks of the river
Thames, at the distance of twelve miles W.S.W. from St.
Paul’s cathedral, London. This parth extends about three
miles and a half in length, one and a half in breadth, and is
nine miles in circumference; it is bounded on the east and
north by Isleworth, on the west by Hanworth, Hampton,
and Teddington, and on the south by the river Thames.
It contains about 1850 acres, of which, according to a sur-
vey taken in the year 1635, about 630 were arable, 490
girth, 40 wood, and 690 common; which does not much
vary from the present proportion, reckoning the fruit gar-
dens, of which there are above 150 acres, among the arable
land. The gardens have long been celebrated for good ma-
agement and abundant produce, and they afford a com-
stant supply to the London market: one gardener, Mr. Wall,
has, in a good season, sent upwards of 40000 gallons of rasp-
berries to a distiller within fifteen days. Twickenham is not
mentioned in the Domesday record, as the whole of this hun-
dred seems to have been included, when that survey was
made, in the manor of Isleworth. In ancient records,
the name is written Twitham, Twittanham, and Twiccan-
ham: and the most popular writers of the early part of the
last century often termed it Twitenham. The manor of
Twickenham appears to have been poiffed, by the religious
long antecedent to the Norman conquest; for the jurisdic-
tion of the lord of Isleworth did not extend to church lands.
This manor appears to have been vested in the crown in the
time of Henry VIII., and by him annexed to the honor of
Hampton-Court. By Charles I. it was settled as part of
the jointure of his queen, on whose death, Charles II. settled
it for life on his comfort, Catherine. A leaf under the
manor house has since been granted to several persons. The
manor house stands opposite to the church, and is traditionally
told to have been the residence of Catherine of Aragon, the
divorced queen of Henry VIII. The parith-church is situated
near the river-side: the old church fell to the ground in the
night of April 9, 1713; the tower, which is composed of fre-
stone, is still remaining; the body was rebuilt, and completed
in the year 1715. This is a brick fabric of the Tuscan order,
with fone coigns and cornices, and was erected after the de-
sign of John James, architect, who likewise built the churches
The interior is fparious, with galleries on the two fides, and
at the west end. The monuments, tablets, and other sepul-
chral memorials, are numerous. A chapel, called Montpelier,
was built about the year 1720, and is the private property
Here is also a meeting-house for Wesleyan Methodists.
A charity-school for boys, and a similar institution for girls,
were established many years back: an extensive and appro-
 priate building has been recently erected by subscription;
and one hundred boys and seventy girls are now educated
according to Dr. Bell’s plan. Thirty of the boys, and
twenty-four girls, are likewise clothed. Here are also
two Sunday schools. Six almshouses were built in 1704,
and fix more in 1721. In the population return of the year
1811, this parish is stated to contain 685 houses, and 3757
inhabitants. The principal manufacture is that of gun-
powder: the powder-mills, formerly the property of Mr.
Hill, but now of Mr. Butts, are seated on the small river
Crane, which, rising in the vicinity of Harrow, is here aug-
mented by an artificial cut from the Colne. Accidents fre-
quently occur in this dangerous business: one cornmill-house
for graining powder was thrice blown up in the year 1795;
in the months of January, July, and November. Seventeen
lives were lost by the three explosions. Five similar casual-
ties have since happened, by which twelve men were killed.
Yet, notwithstanding the frequency of these accidents, and
though the wages of the workmen is but small, employment
in the mills is eagerly sought after: the only apparent reason
is, that the labour is light.

Twickenham Park, Isleworth Park, or the New Park of
Richmond, was, towards the end of the sixteenth century,
the property of the great Sir Francis, afterwards lord, Bacon,
who paffed in this retirement the earlier and more happy part
of his life. He here entertained queen Elizabeth, on which
occasion he presented her with a foonet in praise of her fave-
rite, the earl of Essex. The estate has recently been divided
into lots, and the greater part purchased by Francis Goffing,
efq. The grounds contain some fine cedars: and it is be-
lieved, that the first weeping willow known in this kingdom
was planted in this park in the early part of the last century.
Part of the manifon is in the parth of Isleworth: in the
meadows, between this house and the river, was the original
ftefe of Sion monastery, founded by king Henry V. in
1414.

Twickenham has for a century paft been the retreat of
persons distinguished by their rank or literary fame; and has
been embellished with various manions and villas, to which
a degree of celebrity has attached. We shall briefly notice
the most interesting.

Marble Hill was built by king George II. as a villa for his
miftris, the countess of Suffolk. The purchase of the
estate is said by lord Orford to have cost the king ten or
twelve thousand pounds. The house was erected after a
design of Henry, earl of Pembroke, who superintended the
progress of the structure. Its exterior is of a plain but
well-proportioned character; the interior contains the prin-
cipal attractions, and is finished in a delicate, costly, and
ornamental style. The great hall is entirely composed of mahogany, finely carved; and the flooring of the ong
rooms are of the same wood. This is now the residence
of Charles Augustus Tulis, esq.

Pope’s Villa, as it has long been emphatically called, from
its having been, for nearly thirty years, the residence of our
great poet Alexander Pope, was purchased by him in the year
1715. The improvement of the house and gardens was for
many years his favourite employment; and he was particularly
interested in the construction of a grotto, which he enriched
with many curious spars and gems; from the grotto was a sub-
terraneous passage to the gardens. On the decease of Pope,
which occurred May 30, 1744, the estate was sold to sir
William Stanhope, who added wings to the house and enlarged
the gardens. From him it paffed to his foon-in-law, Welbou
Ellis, afterwards lord Mendip, who guarded every memorial
of the poet as a sacred relic, particularly a fine willow planted
by his own hand. This tree his lordship prapped with affidu-
ous care, but notwithstanding his utmost attention, it perifned
and fell to the ground in 1801, about a year before the death
of its noble owner. The estate was afterwards sold to sir
John Brice, on whose decease it was purchased by baronets Howe
in 1807; under whose direction the house has been taken
down, and a new dwelling erected about a hundred yards
distant from the fite. The grotto has been stripped of its
most curious spars and minerals, by the zeal of those who
wished
TWIN, in Geography, a township of Preble county, in the district of Ohio, containing 719 inhabitants.—Alto, a township of Rofs county, in the same district, containing 1053 inhabitants.

TWIN, North, an island in James's Bay, Hudson's Bay. N. lat. 53° 20'. W. long. 80° 40'.

TWIN, South, an island in James's Bay, Hudson's Bay. N. lat. 53° 10'. W. long. 80° 40'.

TWIN Oat, in Agriculture, a name sometimes applied to an early kind of white oat, which is very productive on deep good land, and which affords full crops on moit fots that are not too poor in quality. It commonly yields somewhat more than the pollard fort. See OAT.

TWINE. Bolt-rope twine, used in fewing fails to their bolt-rove, is made of the long hemp, or from the long rough hemp unbeat. It contains two or three threads, is twitted slack, and wound into half-pound flains containing two hundred yards. Eight threads are spun out of half a pound of hemp, each fifty yards long.

Steal-twine, for feal-nets, is made of twelve threads, two threads first twitted together, then fix of them hardened together, and wound up into half-flains, or eight yards.

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Long's Astron. vol. 1. p. 258.
Scanning or fail-maker's twine, for fewing the seams of sails, is made of the best long hemp, beaten, spun fine, and well dressed over a fine clearer: eighteen threads are spun out of half a pound of hemp, every thread being fifty yards in length: two threads are twined together slack, and wound on a reel, in half-pound bobbins containing four hundred and fifty yards: but twine of three threads is used in the navy.

Seam-twine is made from good long hemp, each thread spun fifty-four yards: three threads are laid together. When hardened and stretched, each cord stands fifty yards; nine hundred yards are wound on a reel, and eighteen cords weigh two pounds.

Store-twine, used by fail-makers for old work and on board of ships, is made from good long hemp, well dressed. Fourteen threads are spun from half a pound; two threads are twined together, and wound into half-pound bobbins of three hundred and fifty yards.

Turlha-twine, for turtle-nets, is made of good bar hemp, spun one hundred yards; three threads are laid together, stand ninety yards, and weigh one pound.

Whipping-twine, the fame as bolt-rope twine.

TWILLING IRONS, square bars with an efs-hook at one end, which grafs the porter or the flank of an anchor to turn it over.

TWINKLING OF THE STARS, denotes that tremulous, vibratory, intermitting motion, which is obferved in the light proceeding from the fixed stars: Alhazen, an Arabifh phi/opher of the twelfth century, confiders refraction as the caufe of this phenomenon.

Vitello, in his Optica, published in 1270, p. 449, attributes the twinkling of the flars to the motion of the air in which the light is refracted: and he obferves, in confirmation of this hypothesis, that they twinkle ftronger when they are viewed in water put into motion.

Dr. Hooke (Microgr. p. 231, &c.) very reasonably attributes this phenomenon to the incoherent and unequal refraction of the rays of light occasioned by the trembling motion of the air and interperfed vapours, in confequence of variable degrees of heat and cold in the air, producing correfponding variations in its rarity or density, and also of the action of the wind, which must cause the fuccesive rays to fall upon the eye in different directions, and confequently upon different parts of the retina at different times, and alfo to hit and mif the pupil alternately; and this is also the reafon, he fays, why the limbs of the fun, moon, and planets appear to wave or dance.

These tremors of the air are manifest to the eye by the tremulous motion of shadows call from high towers; and by looking at objects through the fmoke of a chimney, or through drees of hot water, or at objects situated beyond hot fands, especially if the air be moved tranfverely over them. But when fars are feen through telecopefs that have large apertures, they twinkle but little, and at times not at all. For, as Sir Isaac Newton has obferved, (Opt. p. 98.) the rays of light which pass through different parts of the aperture, tremble each of them apart, and by means of their various, and fometime contrary tremors, fall at one and the fame time upon different points in the bottom of the eye, and their trembling motions are too quick and confined to be separately perceived. And all these illuminated points constitute one broad lucid point, compofed of thofe many trembling points coherently and indifferently mixed with one another by very fhort and twift tremors, and thereby caufe the far to appear broader than it is, and without any trombling of the whole.

Dr. Jurin, in his Essay upon Di/fitinent and Indif/itinent Vision, has recourfe to Sir Isaac Newton's hypothesys of fits of easy refraction and reflection for explaining the twinkling of the flars: thus, he fays, if the middle part of the image of a far be changed from light to dark, and the adjacent ring be at the fame time changed from dark to light, as must happen from the least motion of the eye towards or from the far, this will occasion fuch an appearance as twinkling.

Mr. Michell (Phil. Trans. vol. viii. p. 262.) fuppofes that the arrival of fewer or more rays at one time, especially from the smaller or more remote fixed flars, may make fuch an unequal imprefion on the eye, as may, at leaft, have fome share in producing this effect: since it may be fuppofed, that even a fingle particle of light is sufficient to make a fenfible impref-ffion upon the organs of light; fo that a very few particles arriving at the eye in a fecound of time, perhaps not more than three or four, may be fufficient to make an obje/ contemplably visible. See Light.

Hence, he fays, it is not improbable, that the number of the particles of light which enter the eye in a fecound of time, even from Sirius himfelf, may not exceed three or four thoufand, and from flars of the fecound magnitude they may, therefore, probably not exceed a hundred. Now the apparent increafe and diminution of the light, which we obferve in the twinkling of the flars, feem to be repeated at not very unequal intervals, perhaps about four or five times in a fecound. He, therefore, thought it reafonable to fup- pofe, that the inequalities which will naturally arife from the chance of the rays coming fometimes a little ferner, and fometimes a little rarer, in fo small a number of them, as must fall upon the eye in the fourth or fifth part of a fecound, may be fufficient to account for this appearance. An addition of two or three particles of light, or perhaps a fingle one, upon twenty, especially if there should be an equal deficiency, out of the next twenty, would, he fuppofed, be very fenfible, as he thought was probable from the very great difference in the appearance of fars, the light of which does not differ fo much as is commonly imagined. The light of the middlemfll far in the tail of the Great Bear does not, he thinks, exceed the light of the very small far that is next to it, in a greater proportion than that of about 16 or 20 to 1; and M. Bouguer faw, that a difference in the light of objects, of one part in sixty-fix, was sufficiently diftinguifhable.

Since these obfervations were publifhed, Mr. Michell (as we are informed by Dr. Priestley, Hist. of Light, p. 495.) has entertained fome fufpicion, that the unequal definity of light does not contribute to this effect in fo great a degree as he had imagined; espe/ally in confequence of obferving that even Venus does sometimes twinkle. This he once obferved her to do remarkably when she was about fix degrees high, though Jupiter, which was then about fixteen degrees high, and was fenfibly lefs luminous, did not twinkle at all. If, notwithstanding the great number of rays, which, without doubt, come to the eye from fuch a furface as this planet prefents, its appearance be liable to be affected in this manner, it must be owing to fuch undulations in the atmo/phere, as will probably render the effe/ct of every other cause altogether ine/vable.

M. Mulfchenbroeck (Introd. ad Phil. Nat. vol. ii. feft. 1741, p. 7071.) fuppofes, that the twinkling of the flars arises from fome affection of the eye, as well as the flate of the atmo/phere. For, he fays, that in Holland, when the weather is froithy, and the sky very clear, the flars twinkle much manifestly to the naked eye, though not in telecopes; and since he does not fuppofe there is any great exhalation, or dancing of the vapour at that time, he quefitions whether the vivacity of the light, affecting the eye, may not be concerned in the phenomeno.
TWI

But this philosopher might have satisfied himself with respect to this hypothesis, by looking at the stars near the zenith, when the light traverses but a small part of the atmosphere, and therefore might be expected to affect the eye most sensibly. For he would not have perceived them to twinkle near so much as they do near the horizon, when much more of their light is intercepted by the atmosphere.

Some astronomers have lately endeavoured to explain the twinkling of the fixed stars, by the extreme minuteness of their apparent diameter; so that they suppose the light of them is intercepted by every mote that floats in the air.

To this purpose Dr. Long observes (Afron. vol. i. p. 170.) that our air near the earth is so full of various kinds of particles, which are in continual motion, that some one or other of them is perpetually passing between us and any star which we look at, and this makes us every moment alternately see it and lose sight of it; and this twinkling of the stars, he says, is greatest in those which are nearest the horizon, because they are viewed through a great quantity of thick air, while the intervening particles are most numerous; whereas stars that are near the zenith do not twinkle so much, because we do not look at them through so much thick air, and therefore the interfering particles are fewer, come less frequently before them.

With respect to the planets, it is observed, that they, because they are much nearer to us than the stars, have a sensible apparent magnitude, so that they are not covered by the small particles floating in the atmosphere, and therefore do not twinkle, but shine with a steady light. The fallacy of this hypothesis appears from the observation of Mr. Michell, that no object can hide a star from us that is not large enough to exceed the apparent diameter of the star, by the diameter of the pupil of the eye; so that if a star was a mathematical point, the interfering object must still be equal in size to the pupil of the eye: and, indeed, it must be large enough to hide the star from both eyes at the same time.

The principal cause, therefore, of the twinkling of the stars is now acknowledged to be, the unequal refraction of light, in consequence of inequalities and undulations in the atmosphere.

Besides a variation in the quantity of light, it may here be added, that a momentary change of colour has likewise been observed in some of the fixed stars. Mr. Melville (Edinb. Enc. vol. ii. p. 81.) says, that when one looks fixedly at Sirius, or any bright star, not much elevated above the horizon, its colour seems not to be constantly white, but appears tinted, at every twinkling, with red and blue. Mr. Melville could not entirely satisfy himself as to the cause of this phenomenon; observing, that the separation of the colours by the refractive power of the atmosphere is, probably, too small to be perceived. Mr. Michell's hypothesis above-mentioned, though inadequate to the explanation of the twinkling of the stars, may pretty well account for this circumstance. For the red and blue rays being much fewer than those of the intermediate colours, and therefore much more liable to inequalities, from the common effect of chance, a small excess or defect in either of them, will make a very sensible difference in the colour of the stars.

TWINS, two young ones delivered at a birth by an animal which ordinarily brings forth but one.

It has been greatly disputed, which of two twins is to be esteemed the elder? The faculty of Montpellier have given it, that the latter born is to be reputed the elder, because first conceived: but by all the laws which now obtain, the first-born enjoys the privilege of seniority; and the custom is confirmed by the scripture influence of Esau and Jacob.

But if two twins be born so intermixed, that one cannot distinguish which of the two appeared first, it should seem that neither the one nor the other can pretend to the right of primogeniture, which ought to remain in suspense by reason of their mutual concurrence. In such case, some would have the decision left to the father, and others to the chance of a lot.

In cattle, twins are seldom desirable, as they can rarely be well supported, though occasionally cows are capable of suckling two calves; but in sheep, it is often greatly desirable in different breeds or varieties. The frequency of twins in sheep is much influenced both by the condition of the ewes, and the state of vigour in the rams. Such flocks as are well fed, and pasture easily about the Tupping time, usually produce a far larger proportion of twins, than those which have higher walks, or pastures which are of inferior quality. Twins too are the most frequent in the early part of the lambing season: all which shows the propriety of keeping the ewes well supported, and of not letting the rams have too great a number put to them at each season.

Nice attention is necessary to twins at the time of lambing, by the person who has the charge of the flocks, to see that they are in every way properly taken care of.

See SHEEP.

TWINS, in Astronomy. See GEMINI.

TWINS, in Geography, two small islands in the East Indian sea, near the island of Paraguay. N. lat. 9° 18'. E. long. 113° 3'.—Alfo, two small islands in the East Indian sea, near the north coast of the island of Flores. S. lat. 8° 21'. E. long. 122° 33'.

TWIST of a Rope, Cord, &c. See ROPE.

TWIST, again, is used for the inside, or flat part of a man's thigh, upon which a true horseman rests when on horseback.

TWIST a Horse, To, is violently to wring or twist his tendons about, which causes them to dry up, and deprives them of nourishment, and reduces the horse to the state of impotency with a gelding.

TWISTE, in Geography, a river of Germany, which runs into the Erpe, near Valckmaren, in the duchy of Westphalia.

TWISTED COLUMN. See COLUMN.

TWISTED Silk. See SILK.

TWISTED Thumb-Band, in Rural Economy, a term used to signify the band of hay or straw which is formed by means of the thumb and fingers, by twisting it with them, and employed in binding up trusses of these kinds for sale. See TRUSS.

TWITCH, in Agriculture, a name often applied to a very troublesome plant of the weed kind in tillage land, of which there are several sorts, as the black, white, creeping, and some others. See COUCH-GRAF.

TWITCH-Rake, a name sometimes applied to a large tool of this kind, made use of in dragging and collecting the roots of couch together in arable land, by means of a horse. See COUCH and RAKE.

TWITE, in Ornithology. See LINNET.

TWO Brothers, in Geography, two small islands in the Chinefes sea. N. lat. 8° 30'. E. long. 105° 48'.—Alfo, two small islands in the East Indian sea, near the W. coast of Borneo. S. lat. 1° 32'. E. long. 109° 13'.—Alfo, two small islands in the East Indian sea, 27 miles from the E. point of the island of Madura. S. lat. 6° 50'. E. long. 114° 43'.—Alfo, two small islands in the East Indian
the bay front, is the tool the coast the wheel the tool for,
There this connected cape but It Eaft the considered W. fpecies violent participating fmall Agriculture, term fmall the zealots Rural 17° but but 5°. Alfo, of Ireland, and county of Kerry; 1 mile W. of Lamb's-Head.

Two-Headed Point, a cape on the S.W. coast of the ifland of Kodiak, in the North Pacific ocean, compofing a small ifland, which terminates to the N.E. by a low flat rocky point. South-westward from Two-headed ifland the coast is low, and appears to be compact; but immediately to the northward of it, the shores defcend abruptly into the sea, appear to be much broken, and form an extensive ifland, of which the flat rocky point may be confidered as its S.W. point of entrance; from this, its N.E. point being low projecting land, lies N. 58° E. at the distance of nine miles. The several branches that appeared to flow into the Sound, feemed to wind toward the bafe of a connected range of high fnowy mountains, which no doubt gave boundaries to their extent. N. lat. 56° 54'. E. long. 209° 5'.

Two Hills, a small ifland among the New Hebrides, in the South Pacific ocean. S. lat. 16° 15'. E. long. 166° 38'.

Two-Hill ifland, a small ifland in the Mergui Archipelago. N. lat. 11° 27'.

Two Keys, two small iflands in the bay of Honduras. N. lat. 17° 30'. W. long. 89° 52'.

Two-Saddle ifland, an ifland in the Mergui Archipelago, about four miles long, and two broad. N. lat. 10° 42'.

Two Sifters, two small iflands in the East Indian sea, covered with wood, and surrounded by a reef of coral-rocks. S. lat. 8°. E. long. 106° 12'. Alfo, two small iflands in the Spanish main, near the Mosquito shore. N. lat. 11° 17'. W. long. 82° 55'.

Two Specks, small iflands in the bay of Honduras, surrounded with rocks. N. lat. 17° 20'. W. long. 88° 30'.

TWOBILL, in Agriculture, the name of a tool commonly employed in cutting up roots in the work of paring and burning in the old mode. It is feen in fig. 7, in the plate on paring ploughs. It has fometimes the title of double-bitted mattock.

TWO-FURROW Plough, a term fometimes applied to that of the double kind. It is often useful for cross-cutting land in different cafes, and in giving the laft earth for turnip-crops.

TWO-FURROWING, a term used to signify double furrows, or the breaking up land by the double plough: it also implies trench-ploughing and sod-burying.

TWO-MEAL Cheese, in Rural Economy, a term applied to that fort which is made from the skimmed milk of the evening, added to the new milk of the meal of the morning; that made from the neat milk being termed one-meal. In fome districts, as that of Gloucefter, two-meal cheeſe is made of one meal or portion of coward or clean milk, and the fame of such as is skimmed; but often two of the latter are used to one of the former. Hence this fort is fometimes called coward-cheeſe.

TWO-MOULD-BOARDED Cleaning and Earthing Hoe for Potatoes, in Agriculture, a tool of somewhat the plough kind, contrived for the purpose of cleaning and earthing up these crops with. It has a wheel before to direct the depth of its working, with handles behind to regulate it. There is a sharp hoe attached to a front of coulter-bar in front, with a mould-board on each fide, capable of being fet to different diftances, by a kind of screw in the middle, by which means the ground is pared and laid to the crops. It is confidered a tool that produces much faving and advantage in the culture of potatoes, and which performs its work very effeetually.

TWOPENCE, Herb, in Botany, a species of Lyμsma-chia; which fee.

TWO-THIRDS SUBSIDY. See Duty and Subsidy.

TWUNT, in Geography, a town of Algiers, on the coast of the Mediterranean, defended by a fort; 30 miles N.W. of Tremeanc. N. lat. 35° 18'. W. long. 1° 2'.

TWAYBLADE, in Botany. See Opiums.

TYACUL, in Geography, a town of Hindooftan, in Myfore; 10 miles S. of Colar.

TYAHTATOOA BAY, a bay on the coast of Owhyhee, one of the Sandwich iflands. N. lat. 19° 37'. W. long. 203° 54'.

TYANA, in Ancient Geography, a town of Cappadocia, in the Tyanitide prefecture; the only one in this prefecture, according to Strabo; but according to Ptolemy, there were three others. It was known as the native country of Apollonius Tyanaeus, the celebrated impostor.

TYANA, in Geography, a town of Asiatic Turkey, in Natalia; 25 miles S.W. of Sis.

TYBEE, an ifland near the coast of Georgia, at the mouth of the Savanna: on it is a light-house. N. lat. 32°. W. long. 81°.

TYBEIN. See DUNO.

TYBER. See TIBERIS and Tyberinus. The Tyber appears on the reverse of a medal of Vefpasian, not only as a divinity, but also as the patron and protector of Rome. When Æneas reifed in Italy, he performed religious ceremonies to this river, gave himself up to his protection, and prayed that he might be propitious to him.

TYBERINUS, a king of Alba, and from this prince having drowned himfelf in the Albuca, that river gained the name of Tyber, which it has ever fince retained.

TYBOINE, in Geography, a township of Pennsylvania; 100 miles W. of Philadelphia.

TYCHE, in Ancient Geography. See Syracucus.

TYPHONIC System, or Hypothefa, is an order or arrangement of the heavenly bodies, of an intermediate nature between the Copernican and Ptolemaic, or participating alike of them both. See System.

TYDAL, in Geography. See Ruden.

TYDH, in Ancient Geography, a people of Asiatic Sarmatica, who inhabited mount Caucasus, according to Phiny.

TYE, Dr. in Biography, the bel English compofitor of church music, anterior to Tallis, that our country can boast; for though his name does not appear in the list of musicians of the chapel royal, or household establishment in the short reign of Edward VI., he was, doubtles, at the head of all eccleifiafal compositors of that period. Neither the state of the church, nor religious principles of its nominal members, were fo fetled as to render it poffible to determine, in these times, who among quiet and obedient subjects were Protentants, and who Catholics; for, during the conflict between the zealots of both religions, the changes were fo violent and rapid, that great flexibility or great
great dissimulation must have been practiced by those who not only escaped persecution, but still continued in offices, either of church or state. The few who seem to have been truly pious and conscientious on both sides, suffered martyrdom in support of their opinions; the rest seem to have been either unprincipled, or fluctuating between the two religions. One of the principal evils which the champions for reformation combatted, was the use of the Latin language in the service of the church; however, the best choral compositions produced by the masters of these times, that are come down to us, are to Latin words. Specimens remain of Dr. Tye's clear and masterly manner of composing for the church in that language, when he was at least a nominal Catholic, either during the reign of Henry VIII. or queen Mary; and the late worthy Dr. Boyce has given an admirable example of his abilities in the anthem for four voices, "I will exalt thee, O Lord," inserted in the second volume of his excellent "Collection of Cathedral Music, by English Masters." There is hardly any influence to be found in the productions of composers for the church during his time, of a piece so constantly and regularly in any one key, as this is in the key of C minor, and its relatives; the harmony is pure and grateful; the time and melody, though not so marked and accented as in those of the best compositions of the last century, are free from pedantry, and the difficulty of complicated measures which this composer had the merit of being one of the first to abandon. That he translated the first fourteen chapters of the Acts of the Apostles into metre, in imitation of Sternhold's Pindar, which were the delight of the court in which he lived, was doubtless an absurd undertaking, and was not rendered less ridiculous by the elaborate music to which he set them, consisting of fugues and canons of the most artificial and complicated kind. Dr. Tye, however, if compared with his contemporaries, was perhaps as good a poet as Sternhold, and as great a musician as Europe could then boast; and it is hardly fair to expect more perfection from him, or to blame an individual for the general defects of the age in which he lived.

Tye, in Geography, a river of Virginia, which runs into James river, N. lat. 37° 30'. W. long. 79° 8'.

Tye, in Mining. See STREAMING.

Tye, in Sea Language, denotes a sort of runner, or thick rope, used to transmit the effort of a tackle to any yard or gaff, which extends the upper part of a sail.

The tye is either passed through a block fixed to the maff-head, and afterwards through another block moveable upon the yard or gaff intended to be hoisted; or the end of it simply fastened to the fall, yard, or gaff, after communicating with the block at the maff-head. See JERS.

TYER, in Geography, a river of South Carolina, which runs into the Cangaree, N. lat. 34° 30'. W. long. 81° 45'.

TYERS, JOHNATHAN, in Biography, the late proprietor, and indeed the creator of Vauxhall gardens, (see VAUXHALL,) deserves a place among our biographical articles on many accounts. His taste, liberality, and spirit in supporting and ornamenting this elegant place of amusement with paintings by Hogarth and Hayman; an excellent band of music; an orchestra in the form of a temple in the open air, with an organ equal in size and workmanship to many of the most noble instruments of that kind in our churches; and a constant succession of ingenious exhibitions; rendered it a public place more attractive, admired, and imitated by foreigners, than any one our country could boast. In every part of Europe a nominal Vauxhall has been established; nor was there a theatre on the continent thirty years ago, with scenery and ballet pantomimes, without an attempt at representing Vauxhall.

The proprietor began with a small band of wind-instruments only, before he erected an orchebra, and furnished it with an organ; but in the summer of 1745, to render it still more attractive, he added, for the first time, vocal to his instrumental performances. Here the talents of many of our national musicians were first displayed and first encouraged; here Collet and Tinto on the violin, Snow on the trumpet, Millar on the bassoon, Worgan on the organ, &c. annually increased in merit and favour. Here Mellet, Arne, Lowe, and the elder Reinholt sung during many years, with great applause, Dr. Arne's ballads, duets, dialogues, and trios, which were soon after circulated throughout the kingdom, to the great improvement of our national taste. During this first summer, his little dialogue of Colm and Phæbe, written by the late Mr. Moore, author of "Fables for the Female Sex," was constantly encored every night for more than three months successively.

But here the good sense, found judgment, and good taste of the spirited proprietor of Vauxhall, derive a record for the veneration and respect which he manifested for Handel; at a time when the health and favour of this great master were on the decline, and opposition had almost ruined him: it was then that Tyers erected, at his sole expense, the marble statue which still adorns the gardens; an honour which has seldom been conferred on a subject and a professional man, during his life-time, in any country, since the flourishing state of the Greeks and Romans. And as this transgression doth honour, not only to the genius of Handel, but to the public spirit of his votary, we shall relate it as recorded in the registers of the times.

April 15th, 1733, in the London Daily Post, a paragraph says: "The effigies of Mr. Handel, the famous composer of music, is going to be erected at Vauxhall gardens, at the expense of Mr. Jonathan Tyers." And on the 19th of the same month, "We are informed, from very good authority, that there is now near finished a statue of the justly celebrated Mr. Handel, exquisitely done by the ingenious Mr. Roubilliac, of St. Martin's-lane, Haymow, out of one entire block of marble, which is to be placed in a grand niche, erected on purpose in the great grove at Vauxhall gardens, at the sole expense of Mr. Tyers, conductor of the entertainments there; who, in consideration of the real merit of that immovable matter, thought it just and propriety that his effigies should prefide in that place, where his harmony has so often charmed even the greatest crowds into the most profound silence and attention. It is believed, that the expense of the statue and niche cannot cost less than 3000; the fair gentleman, likewise, very generously took at Mr. Handel's benefit, fifty of his tickets."

May 2d, we have a farther account of this species of apotheosis, or laudable idolatry, in the following words: "Last night at the opening of the Spring-gardens Vauxhall, the company expressed great satisfaction at the marble statue of Mr. Handel, who is represented in a loose robe, sweeping the lyre, and listening to its sounds; which a little boy sculptured at his feet seems to be writing down on the back of a violoncello. The whole composition is in an elegant taste."

Soon after, the following verses appeared:

"That Orpheus moved a grove, a rock, or stream,  
By music's power, will not a fiction seem;  
For here as great a miracle is shown—  
A Handel breathing, though transform'd to stone."

TYFORD,
TYFORY, in Geography, a small island in the East Indian seas, 45 miles W. of Gilolo. N. lat. 1° 0' E. long. 126° 28'.

TYGARTS VALLEY, a district of Pennsylvania, watered by the Monongahela river.

TYGER, in Zoology. See Tiger.

Tyger, in Geography, a river of South Carolina, which joins the Saluda, 5 miles N. of Columbia; and both together form the Congaree.

Tyger's Point, a cape of Asia, on the south-west coast of Asia, at the mouth of the Perfian. N. lat. 15° 50'. E. long. 94° 45'.

Tyger's Creek, a river of Kentucky, which runs into the Ohio, N. lat. 38° 22'. W. long. 83°.

Tyger's Island, a small island in the Chincoteague, near the coast of Chippa. N. lat. 16° 47'. E. long. 107° 45'.

—Allo, a small island in the Chincoteague, near the coast of the Ohio, N. lat. 16° 51'. E. long. 106° 13'.

Tyger Island, a small island in the Pacific ocean, at the entrance of the bay of Amapalla. N. lat. 13° 10'.

Tyger Islands, a cluster of small islands and shoals in the East Indian seas; 30 miles E. from the island of Saleyer.

TY-GWYN, a village of South Wales, in the county of Caernarthen, where Howel Dha, first monarch of all Wales, had a palace: and in the year 947, a council was held, to form a body of laws. On this spot a Cetirian monastery was founded, called Whetford Abbey; 5 miles W. of St. Clare.

TYING, in Music. See LEGATE-Note and SYNCOPE.

TYKOCZYNS in Geography, a town of Poland, in the palatinate of Bieflk. In 1705, Augustus II. instituted the order of the White Eagle in this town; 28 miles N.N.W. of Bieflk.

TYLAMG, in Ancient Geography, a town of the Peloponnesus, in Triphylia, according to Polybius.

TYLE, or Tile, in Building, a sort of thin, factitious, laminated brick, used on the roofs of houses, or, more properly, a kind of flat clayey earth, kneaded and moulded of a jutthickens, dried and burnt in a kiln, like a brick, and used in the covering and paving of houses.

It is thus called from the French tuile, of the Latin tegula, which signifies the same.

Tiles are made, says Mr. Leyburn, of better earth than brick-earth, and something near akin to the potter's earth.

By 17 Geo. III. c. 42, all combinations for enhancing the price of tiles and bricks, shall be void; and every tyle-maker, or brick-maker, offending, shall forfeit 20l., and every clerk, agent, or servant, to half the poor, and half to him who sues within six months.

By 43 Geo. III. c. 69, schedule (A.) and the 45 Geo. III. c. 30, in lieu of any duties of excise then subjoined, new duties were imposed.

The said duties on bricks and tyles to be paid by the maker or makers thereof respectively.

For the duties on exportation and importation, see the schedules annexed to the said act of 43 Geo. III. c. 69.

Provided always, that tyles made for the sole purpose of draining land, 19½ inches long by 13½ inches broad, and bent into a semi-elliptical form, the inside of the crown of the arch thereof being not less than seven inches perpendicular, from a straight line drawn from the one to the other side thereof after the fame is fo bent, and such lines not being at any part thereof more than five inches distant from each other on the inside, as near of the dimensions, and bent as nearly into the form aforesaid as may be, to be used for the purposes aforesaid, shall not be subject to any of the said duties. 34 Geo. III. c. 15.

And the exemption is extended to tyles made for such purpose not less than nine inches long; such being in every other respect of the same description and dimension as before preferred. 42 Geo. III. c. 93.

And by the 46 Geo. III. c. 138, it is further enacted, that semi-elliptical tyles not exceeding in wide width six inches, and the height of which from the outside of the crown of the arch in a perpendicular line to the edge shall in all cases exceed the width, but with a foot from the bottom of the arch where necessary, not exceeding two inches in breadth, made for draining wet or marly lands, are exempted from the excise duty.

And any person using any such tyle for any other purpose than above-mentioned, incurs the penalty of 6d. each tyle so used.

And every maker of bricks or tyles, before he begins to make, shall leave or give notice in writing at the next excise office of his name and place of abode, and of the sheds, workhouses, or other places where such bricks or tyles are intended to be made; on pain of 100l. 24 Geo. III. c. 24. feft. 2.

All bricks and tyles chargeable with the said duties shall be taken account of and charged by the officer whom they are drying, after being turned out of the moulds, and before removed to the kiln or clamp for burning, for which purpose any officer may enter into the fields, sheds, or other places where making, and shall take an account thereof in writing, and leave a copy (if demanded) with each maker, on pain of 40l.; and if any per son shall obstruct such officer, he shall forfeit 50l.

The officer charging the duty shall allow ten for every hundred when charged in the field before burned, in compensation for all waste, loss, or damages.

And if the maker shall remove any bricks or tyles to the kiln or clamp or other place of burning from out of the field or place where they shall be put or placed to dry before the officer shall have taken an account thereof, he shall forfeit 50l. And all so carried away, and found in the possession of any maker, or trader therein, or per son for his use, shall be forfeited and may be seized, or the value thereof shall be forfeited. 25 Geo. III. c. 66.

Provided, that no such maker shall be subject to the said penalty, if the officer shall fail to take an account, on due notice given him three days before such removal. 24 Geo. III. c. 24. feft. 2.

The maker shall keep the bricks and tyles unsurveyed separate from those that have been surveyed; on pain of forfeiting 50l. 25 Geo. III. c. 66.

And such maker shall, while the same are drying, place them in such manner as the officer may easily and securely take an account thereof; and if he shall place them in an irregular or unusual manner, with intent to make it difficult or unsafe for the officer to take such account, he shall forfeit 50l.

If any maker shall fraudulently conceal or hide any bricks or tyles in any part of the operation of making, with intent to evade the duties, he shall forfeit the same, and also 20l. 24 Geo. III. c. 24. feft. 2.

Every such maker shall once in every six weeks make entry in writing upon his oath, or on the oath of his chief workman, at the next excise office, of all bricks and tyles by him made within that time, on pain of 50l. And shall also, within six weeks after such entry, clear off all the duties then due thereon; on pain of double duty. And if any person shall carry away such bricks or tyles before the duty be cleared off, he shall forfeit double the value thereof. But such
Tyl

fuch maker shall not for making fuch entry be obliged to go
further than the next market-town.

And all tools, implements, and utensils used in making fuch bricks or tyles, in custody of the maker, &c. shall be liable to be fized for any debts or penalties, (arising or incurred under this act,) whether the debtor or offender be the lawful owner thereof or not. 28 Geo. III. c. 37.

Bricks or tyles for which the duties have been paid may be exported, and on security given before the shipping thereof that the fame shall not be relanded, the perfon exporting the fame shall be allowed a drawback of fuch duties; and in cafe fuch bricks or tyles shall be relanded, the fame shall be forfeited to the ufe of his majefly, over and above the penalty of fuch bond. 27 Geo. III. c. 13. fched. (F.)

All penalties and forfeitures are to be fized for, levied, and mitigated as by the laws of excif, or in cafes at Welfminster, and to be distributed half to the king, and half to him that fhall fize. 24 Geo. III. c. 24. eff. 2.

For the method of burning tyles, fee BRICK.

As to the applying of tyles, fome lay them dry, as they come from the kiln, without mortar, or any thing elfe; others lay them in a kind of mortar made of loam and horfe-dung. In fome parts, as in Kent, they lay them in mofts.

There are various kinds of tyles for the various occasions of building; as plain, thack, ridge, roof, creafts, gutter, pan, crooked, Flemifh, corner, hip, dornan or dornam, scallop, aftragal, travefes, paving, and Dutch tyles.

Tyles, Plain or Thack, are thofe in ordinary ufe for the covering of houfes. They are fqueezed flat, while yet foft, in a mould. They are of an oblong figure, and by flat. Edw. IV. c. 4. are to be ten inches and a half long, fix and a quarter broad, and half an inch and half a quarter thick. But these dimensions are not ftrictly observed.

Plain tyles are not laid in mortar, but only pointed in the infide.

Tyles, Ridge, Roof, or Creafes, are thofe ufed to cover the ridges of houfes, being made circular, breadthwife, like a halve cylinder. Thofe are what Pliny calls interculi, and are by flatute to be thirteen inches long, and of the fame thicknefs with the plain tyles.

Tyles, Hip or Corner, are thofe which lie on the hips or corners of roofs. As to form, they are firt made flat, like plain tyles, but of a quadrangular figure, whole two fides are right lines, and two ends arcs of circles; one end being a little concave, and the other convex. The convex end is to be about seven times as broad as the concave end; fo that they would be triangular, but that one corner is taken off; then, before they are burnt, they are bent on a mould, breadthwise, like ridge tyles. They have a hole at their narrow end to nail them on by, and are laid with their narrow end upwards. By flatute, they are to be ten inches and a half long, and of a convenient breadth and thicknefs.

These, as well as the ridge tyles, are to be laid in mortar, because they feldom lie to clofe as not to admit any water to pafs between them.

Tyles, Gutter, are thofe which lie in gutters or valleys in crofs-buildings. They are made like corner tyles, only the corners of the broad end are turned back again with two wings. They have no holes in them, but are laid with the broad end upwards, without any nailing. They are made in the fame mould as corner tyles, and have the fame dimensions on the convex fides. Their wings are each four inches broad, and eight long.

These tyles are feldom ufed where lead is to be had.

Tyles, Pan, Crooked, or Flemifh, are ufed in covering

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of theds, ftables, out-houfes, and all kinds of flat-roofed buildings. They are in form of an oblong parallelogram, as plain tyles, but are bent breadthwise forwards and backwards, in the form of an S, only one of the arches is at least three times as big as the other, which biggest arch is always laid uppermost, and the left arch of another tyle lies over the edge of the great arch of the former. They have no holes for pins, but hang on the laths by a knot of their own earth. By 17 Geo. III. c. 42. they are to be, when burnt, not less than thirteen inches and a half long, and a half inches wide, and half an inch thick, on pain that the maker fhall forfeit 10s. for every 1000.

Pan-tyles are laid in mortar, because the roof being flat, and many tyles being warped in the burning, they will not cover the roof so well as that no water pafs between them.

Tyles, Dornam or Dorman, confift of a plain tyle, and a triangular piece of a plain one, standing up at right angles to one fide of the plain tyle, and swept with an arc of a circle from the one end, which end terminates in a point. Of thofe tyles there are two kinds; the triangular piece, in fome, standing on the right, in others on the left fide of the plain tyle. And of each of thofe, again, there are two kinds, fome having a whole plain tyle, others but half a plain tyle. But in them all, the plain tyle has two holes for the pins, at that end where the broad end of the triangular piece stands.

Their ufe is to be laid in the gutters, betwixt the roof and the cheeks or fides of the dornars, the plain part lying on the roof, and the triangular part standing perpendicularly by the cheek of the dornar. They are excellent to keep out the wet in thofe places, and yet they are hardly known any where but in Sufex. The dimensions of the plain tyle part are the fame as thofe of a plain tyle, and the triangular part is of the fame length, and its breadth at one end seven inches, and at the other nothing.

Tyles, Scallop or Aftragal, are, in all refpects, like plain tyles, only their lower ends are in form of an aftragal, viz. a femicircle, with a square on each fide. They are ufed in fome places for weather tyling.

Tyles, Travefes, are a kind of irregular plain tyles, having the pin-holes broken out, or one of the lower corners broken off. These are laid with the broken end upwards, upon the rafters, where pinned tiles cannot hang.

Tyles, Flemifh or Dutch, are of two kinds, ancient and modern. The ancient were ufed for chimney foot-paces; they were painted with antique figures, and frequently with fculptures of foldiers, fome with compartments, and fome with moriffeque devices; but they came greatly short, both as to the defign and colours, of the modern ones.

The modern Flemifh tyles are commonly ufed plastered up in the jamb of chimneys, instead of chimney cornerstones. Thofe are better glazed, and fuch as are painted (fome for fome are only white) are much better performed than the ancient ones.

But both kinds feem to be made of the fame whitifh clay as our white-glazed earthen-ware. The ancient ones are five inches and a quarter square, and about three-quarters of an inch thick; the modern ones fix inches and a half square, and three-quarters of an inch thick.

When thofe tyles are fet with good mortar they look beautiful, and caft a greater heat than stone; for, being very smooth and glazed, the rays of heat striking upon them are all reflected into the work, especially when the fides of the chimneys are oblique, or in the form of circular arches. But they are little ufed.

Tyling is measured by a square of 100 square feet; and the number of tyles required for such a square depends on

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the distance of the latter, which, when six inches, requires 800; when six and a half inches, 740; when seven inches, 690; when seven and a half inches, 640; and when eight inches, 600 tyes.

**TYL**

**TYLER.** See Tyle.

**TYLERS, Great.** in Geography, a small island in the Gulf of Guinea. N. lat. 50° 50' E. long. 27° 12'.

**TYLERS, Little.** a small island in the Gulf of Finland. N. lat. 59° 48'. E. long. 26° 54'.

**TYLERY.** See Tulerie.

**TYLIS.** in Ancient Geography, a town of Thrace, on mount Hamus.


The plants of this genus have twining, either herbaceous or shrubby, stems. Leaves opposite, membranous, flat. Umbels standing between the footstalks. Flowers for the most part small. Four of the species are natives of New Holland, chiefly within the tropic, but extending as far as thirty-three degrees of south latitude. As many are found either in the East Indies or the equinoctial parts of Africa, but of these four latter, none of them described in any botanical work, the learned author has favoured us with no account. We can therefore merely give the characters of the New-Holland species, from his Prodromus. It only remains for us to observe, that Tylophora comes very near Hoya, see that article; differing scarcely in any part of the essential character, except the want of a tooth at the inner angle of each leaf of the crown; and with respect to habit, distinguished from one only of the two species of that genus, by having membranous, not flabby, leaves.

1. **T. grandiflora.** Large-flowered Tylophora. Br. n. 1.—Umbels nearly fleshy, simple, of few flowers; their partial stalks smooth. Leaves heart-shaped, ovate, acute, downy as well as the branches.—Native of Port Jackson, New South Wales.

2. **T. barbata.** Bearded Tylophora. Br. n. 2.—Umbels mossily in pairs; their common stalk shorter than the leaves. Corolla bearded. Leaves ovate, acute, very smooth.—Gathered near Port Jackson, by Mr. Brown himself.

3. **T. flexuosa.** Zigzag Tylophora. Br. n. 3.—Umbels alternate, fleshy on a zigzag common stalk. Leaves heart-shaped, oblong, veiny. Corolla bearded.—Found by Mr. Brown, in the tropical part of New Holland.

4. **T. paniculata.** Paniced Tylophora. Br. n. 4.—Panicles forked. Segments of the corolla ligulate upwards. Leaves ovate, pointed, nearly smooth; the lowermost somewhat heart-shaped.—Discovered in the neighbourhood of Port Jackson, by Mr. Ferdinand Bauer, the botanical companion of Mr. Brown, to whose exquisite pencil the duty of perpetuating the acquisitions of their hazardous expedition, undertaken at the national expense, was entrusted. Yet too little has the engagement to the public been fulfilled, that except a small but exquisite falciculus of plates, and the excellent but incomplete publications of Mr. Brown, all the discoveries of these naturalists have as yet remained fruitless: not, certainly, for want of their ability or inclination to complete what they have undertaken, but because, as we presume, the due injuctions, as well as the necessary aids, have been withheld.

**TYLOS, in Orni**thology, a name by which many authors have called the *Sords filius*, or redwing.

**TYLOTICA.** medicines supposed to promote the formation of callus.

**TYLSEN, in Geography, a town of Brandenberg, in the Old Mark, on the Dicke; 5 miles S.W. of Salzwedel.**

**TYLUS, in Ancient Geography, a town of the Peloponnesus, on the coast of the gulf of Messenia, between the isles of Tyrides and the town of Leuctrum, according to Strabo; it is called Otyile by Pausanias, who places it between the port of Melia and Talama.—Alfo, an island of the Persian gulf, at the distance of twenty-four hours' navigation from the mouth of the Euphrates, according to Arrian.—Alfo, Tylus minor, distant 10 miles in the same gulf from the greater Tylus; named Arados by Strabo, and Arathos by Ptolemy.

**TYLWITH, in matters of Heraldry and Defect, is sometimes used for a tribe or family branching out of another, which the modern heralds more usually call the second or third house.**

**TYLWDAN, in Geography, a river on the S. coast of the island of Java, which runs into the sea, S. lat. 7° 38'. E. long. 108° 47'.**

**TYMARE, a town of Hindostan, in Bahar; 25 miles E. of Chuta Nagpour.**

**TYMBALES, Fr. kettle-drums, instruments of percussion, consisting of two mettalic globes covered with parchment; beaten with two drum-sticks, in the form of round hammers or mallets, from eight to nine inches long. The tone is short and dull. They are tuned 4ths to each other. The smallest drum produces the key-note of the composition in which they are employed, and the largest, the 4th below; as in the key of C the tones are these:

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C E G
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There are braces, by which the pitch can be raised or lowered at pleasure. See Drum, and Kettle-Drum.

**TYMBERS of Skins.** See Timber.

**TYMBRA, in Ancient Geography, a town of Asia, in Pindia.**

**TYMBRE, Fr. in Music, is a term used to express that quality of tone or sound which renders a voice or instrument rough or smooth, harsh or sweet, coarse or mellow in tone. Sweet-toned instruments seem always feeble, and harsh-toned too loud. A perfect voice or instrument would be that which united force with sweetness. The quality of tone generally determines our idea of its force. The voice of Manzoli, at once extremely powerful and extremely sweet, was miraculous. There are perhaps no instruments that can be at once loud and sweet, except those of the violin family, played with a bow; as the violin, tenor, and violoncello.**

**TYMENIAUM, in Ancient Geography, a mountain of Asia, in the vicinity of Phrygia.**

**TYMES, a town of Africa, in Libya.**

**TYMIUM, a small town of Asia, in Phrygia.**
TYMNISSUS, a town of Asia Minor, in Caria.

TYMNUS, a town of Asia Minor, in Caria, which derived its name from the promontory called by Mela Tymnias.

TYMPAN, or Tympanum, in Architecture, the area of a pediment, being the part which is in a level with the naked of the freeze. Or it is the space included between the three cornices of a triangular pediment, or the two cornices of a circular one.

Sometimes the tympan is cut out, and the part filled with an iron lattice, to give light; and sometimes it is enriched with sculpture, in baffe-relëve, as in the west front of St. Paul's, in the temple of Castor and Pollux at Naples, &c.

Tyman is also used for that part of a pedestal called the trunk or dye.

Tyman, among Joiners, is also applied to the panells of doors.

Tyman of an Arch, is a triangular space or table in the corners or sides of an arch, usually hollowed and enriched, sometimes with branches of laurel, olive-tree, or oak; or with trophies, &c.; sometimes with flying figures, as Fame, &c. or fitting figures, as the cardinal virtues.

Tyman, in Anatomy, Mechanics, &c. See Tymanum.

Tyman, among Printers, is a double frame belonging to the press, covered with parchment, on which the blank sheets are laid in order to be printed off. See Printing-Press.

TYMANA, or Tyman, among the Athenians, a capital punishment, in which the criminal, being affixed to the pole, was punished to death with cudgels. Potter, Archæol. Graec. lib. c. 25. tom. i. p. 134.

TYMANIA, in Ancient Geography, a town of the Peloponnæus, in the interior of the Elide. Ptolemy.

TYMANITES, in Medicine, from τυμπανόν, tympanum, a drum, a flatulent distension of the belly, which, when itruc, emits a sound which has been compared to the noise produced by that instrument. It has been called, in English, the tympany, and windly dropy.

The tympanites is a swelling of the abdomen, in which the integuments appear to be much stretched by some distending power within, and they are equally stretched in every portion of the body. The swelling does not very readily yield to any pressure; and so far as it does, being extremely elastic, it very quickly recovers its former state, when the pressure is removed. Being stuck, it gives an obscurion found, somewhat like that of a drum, or other distended animal membrane. No fluctuation within is to be perceived; and the whole feels less weighty than might be expected from its bulk. The unevenness from the distension is partially relieved by the discharge of wind from the alimentary canal, either upward or downward.

These are the characters, then, by which the tympanites, or flatulent swelling of the belly, may be distinguished from the afeites, or dropy of that cavity, and from physonia, or solid tumours, sometimes occurring there; and many experiments shew that the tympanites always depends upon a preternatural collection of air somewhere within the teguments of the abdomen. But the situation which the air occupies in different infinences is somewhat different; and this produces the different species of the distene which nololoists have deveribed.

One species, and indeed the most common and curable species, is that in which the collected air is confined within the cavity of the alimentary canal, and chiefly in that of the intestines. This species, therefore, has been named the tympanites intestinalis. (See Sauvages Nofol. Method.

Clars. x. (spec. 1.) To this species, indeed, which is the most frequent, the character above given especially belongs.

A second species is, when the air collected is not entirely confined to the cavity of the intestines, but is also present between their coats; and such is that which is named by Sauvages tympanites enterothefodes. (Sauv. spec. 3.) This has certainly been a rare occurrence; and has probably occurred only in connection of the tympanites intestinals, by the air escaping from the cavity of the intestines into the interstices of the coats. It is, however, possible, that an erosion of the internal coat of the intestines may give occasion to the air, so constantly present in their cavity, to escape into the interstices of their coats, though in the whole of their cavity there has been no previous accumulation.

A third species is, when the air is collected in the sac of the peritoneum, or what is commonly called the cavity of the abdomen, that is, the space between the peritoneum and visera; and then the disease is named tympanites abdominalis. (Sauv. p. 2.) The existence of such a tympanites, without any tympanites intestinals, has been disputed; and it certainly has been a rare occurrence; but from several directions, it is unquestionable that such a disease has sometimes truly occurred.

A fourth species of tympanites is, when tympanites intestinals and abdominals are joint together, or take place at the same time. With respect to this, it is probable that the tympanites intestinalis is the primary disease; and the other only a consequence of the air escaping, by an erosion or rupture of the coats of the intestines, from the cavity of the peritoneum, into that of the abdomen. It is indeed possible, that in consequence of erosion or rupture, the air which is so constantly present in the intestinal canal, may escape from thence in such quantity into the cavity of the abdomen, as to give a tympanites abdominals, whilst there was no previous considerable accumulation of air in the intestinal cavity itself; but we have no facts by which to ascertain this matter properly.

A fifth species has also been enumerated. It is when a tympanites abdominals happens to be joined with the afeites, or dropy of the belly; and such a disease is therefore named by Sauvages tympanites asfeticus. (Sauv. spec. 4.)

In most cases of tympanites, indeed, some quantity of serum has, upon distension, been found in the sac of the peritoneum; but that is not enough to constitute the species now mentioned; and when the collection of serum is more considerable, it is commonly where, both from the causes which have preceded, and likewise from the symptoms which attend, the afeties may be considered as the primary disease; and therefore that combination does not exhibit a proper species of the tympanites.

As this last is not a proper species, and as some of the others are not only extremely rare, but even, when occurring, are neither primary nor to be easily distinguished, nor, as considered in themselves, admitting of any cure, it will be unnecessary to take any farther notice of them; we shall therefore confine ourselves, in what follows, to the consideration of the most frequent case and almost the only object of practice, the tympanites intestinalis.

With respect to this, it does not appear that it arises in any peculiar temperament, or depends upon any predisposition, which can be discerned. It occurs in either sex, at every age, and frequently in young persons.

Various remote causes of it have been assigned; but many of these have not commonly the effect of producing this disease; and although some of them have been truly antecedents of it, we can in few instances discover the manner
manner in which they produce the disease, and therefore cannot certainly ascertain them to have been causes of it.

The phenomena of this disease, in its several stages, are the following.

The tumour of the belly sometimes grows very quickly to a considerable degree, and seldom in the flow manner the affections commonly come on. In some cases, however, the tympanites comes on gradually, and is introduced by an unusual flatulency of the stomach and intestines, with frequent borborygmi, and an uncommonly frequent expulsion of air upwards and downwards. This state is also frequently attended with colic pains, especially about the navel, and upon the sides towards the back; but generally, as the disease advances, these pains become less considerable. As the disease proceeds, there is a partly constant desire to discharge air, but it is accomplished with difficulty; and when obtained, although it give some relief from the pain of digestion, this relief is commonly transient and of short duration. While the disease is coming on, some inequality of tension and tension may be perceived in different parts of the belly; but the tension soon becomes equal over the whole, and exhibits the phenomena mentioned in the character. Upon the first coming on of the disease, as well as during its progress, the belly is bound, and the faces discharged are commonly hard and dry. The urine, at the beginning, is usually very little changed in quantity or quality from its natural state; but as the disease continues, it is commonly changed in both respects, and at length sometimes a strangury, and even an itch, comes on. The disease has seldom advanced far, before the appetite is much impaired, and digestion ill performed; and the whole body, except the belly, becomes considerably emaciated. Together with these symptoms, a thrill and uneasy sense of heat at length come on, and a considerable frequency of pulse occurs, which continues throughout the course of the disease. When the tumour of the belly arises to a considerable bulk, the breathing becomes very difficult, with a frequent dry cough. With all these symptoms, the strength of the patient declines; and the febrile symptoms daily increasing, death at length ensues, sometimes probably in consequence of a gangrene coming upon the intestines.

The tympanites is commonly of some duration, and to be reckoned a chronic disease. It is very seldom quickly fatal, except where such an affection suddenly arises in fevers. To this, Sauvages has properly given a different appellation, that of *meteorismus*; and it may perhaps always be considered as a symptomatic affection, entirely distinct from the tympanites which we are now considering.

The tympanites is generally a fatal disease, seldom admitting of cure; but we shall mention what may be attempted in this way, after having endeavoured to explain the proximate cause, which alone can lay the foundation of what may be rationally attempted towards its cure.

To ascertain the proximate cause of tympanites is somewhat difficult. It has been supposed, in many cases, to be merely an uncommon quantity of air present in the alimentary canal, owing to the extrication and detachment of a greater quantity of air than usual from the alimentary matters taken in. Our vegetable aliments probably always undergo some degree of fermentation; and in consequence, a quantity of air is extricated and detached from them in the stomach and intestines; but it appears, that the mixture of the animal fluids which our aliments meet with in the alimentary canal, prevents the same quantity of air from being detached from them that would have been in their fermentation without such mixture; and it is probable that the same mixture contributes also to the re-absorption of the air that had been before in some measure detached. The extrication, therefore, of an unusual quantity of air from the aliments, may, in certain circumstances, be such, perhaps, as to produce a tympanites; so that this disease may depend upon a fault of the digestive fluids, by which they become unfit to prevent the too copious extrication of air, and unfit also to occasion that re-absorption of air, which in sound persons commonly happens. An unusual quantity of air in the alimentary canal, whether owing to the nature of the aliments taken in, or to the fault of the digestive fluid, does certainly sometimes take place; and may possibly have, and in some measure certainly has, a share in producing certain flatulent disorders of the alimentary canal; but cannot be supposed to produce the tympanites, which often occurs when no previous disorder had appeared in the system. Even in those cases of tympanites which are attended at their beginning with flatulent disorders in the whole of the alimentary canal, as we know that a firm tone of the intestines both moderates the extrication of air, and contributes to its re-absorption or ready expulsion, so the flatulent symptoms which happen to appear at the coming on of a tympanites, are probably referred to a less of tone in the muscular fibres of the intestines, rather than to any fault in the digestive fluids.

Thence, and other considerations, lead us to conclude, that the chief part of the proximate cause of tympanites, is a less of tone in the muscular fibres of the intestines. But further, as air of any kind accumulated in the cavity of the intestines should, even by its own elasticity, find its way either upwards or downwards, and should also, by the assistance of inspiration, be entirely thrown out of the body; so when neither the re-absorption nor the expulsion takes place, and the air is accumulated so as to produce tympanites, it is probable that the passage of the air along the course of the intestines is in some places interrupted. This interruption, however, can hardly be supposed to proceed from any other cause than spasmodic constrictions in certain parts of the canal; and we may conclude, therefore, that such constrictions concur as part in the proximate cause of tympanites. Whether these spasmodic constrictions are to be attributed to the remote cause of the disease, or may be considered as the consequence of some degree of atony first arising, cannot with certainty be determined.

**Cure of Tympanites**—Having thus endeavoured to ascertain the proximate cause of tympanites, we proceed to treat of its cure; which indeed has seldom succeeded, and almost never but in a recent case of the disease. It may be proper, however, to state what may be reasonably attempted; what has commonly been attempted; and what attempts have sometimes succeeded in the cure of this disease.

It must be a first indication to evacuate the air accumulated in the intestines: and for this purpose, it is necessary that those constrictions, which had especially occasioned its accumulation, and continue to interrupt its passage along the course of the intestines, should be removed. As these, however, can hardly be removed but by exciting the peristaltic motion in the adjoining portions of the intestines, purgatives have been commonly employed; but it is at the same time agreed, that the more gentle laxatives only ought to be employed, as the more drastic, in the overstrung and tense state of the intestines, are in danger of bringing on inflammation. It is for this reason, also, that glysters have been frequently employed; and they are the more necessary, as the faces collected are generally found to be in a hard and dry state. Not only on account of this state of the faces, but, farther, when glysters produce a considerable evacuation of air, and
and thus shew that they have some effect in relaxing the spasm of the intestines, they ought to be repeated very frequently.

In order to take off the contractions of the intestines, and with some view also to the carminative effects of the medicines, various antispasmodics have been proposed, and commonly employed; but their effects are seldom considerable; and it is alleged that their heating and inflammatory powers have sometimes been hurtful. It is, however, always proper to join some of the milder kinds with both the purgatives and glirres that are employed; and it has been very properly advised to give always the chief of antispasmodics, that is, an opiate, after the operation of purgatives is finished.

In consideration of the overstrung and tense state of the intestines, and especially of the spasmodic contractions that prevail, fomentations and warm bathing have been proposed as a remedy; and are said to have been employed with advantage: but it has been remarked, that very warm baths have not been found so useful as tepid baths long continued.

Upon the supposition that this disease depends especially upon an atony of the alimentary canal, tonic remedies seem to be properly indicated. Accordingly, chalybeates and various bitters have been employed; and, if any tonic, the Peruvian bark might probably be useful. But as no tonic remedy is more powerful than cold applied to the surface of the body, and cold drink thrown into the stomach; so such a remedy has been thought of in this disease. Cold drink has been constantly prescribed, and cold bathing has been employed with advantage; and there have been several instances of the disease being suddenly and entirely cured by the repeated application of ice to the lower belly.

It is hardly necessary to remark, that, in the diet of tyrannical persons, all sorts of food disposed to become flattulent in the stomach are to be avoided; and it is probable, that the mineral acids and neutral salts, as antacids, may be useful.

In obliterative and suppurative cases of tympanitis, the operation of the paracentesia (tapping) has been proposed; but it is a very hazardous remedy, and there is no satisfactory testimony of its having been practised with success. It must be observed, that this operation is a remedy suited especially, and almost exclusively, to the tympanitis abdominalis; the existence of which, separately from the intestinals, is very doubtful, at least not easily ascertained, yet it is not very likely to be cured by this remedy: and how far the operation might be safe in the tympanitis intestinulis, is not yet determined by any proper experience. There would be a danger, indeed, of converting the tympanites intestinals into the tympanitis abdominalis, by allowing the air to escape through the puncture of the intestine into the face of the peritoneum, and thus of converting a less disease into a greater, and, in fact, of producing irreparable mischief.

TYMPANOTRIBA, among the Ancients, a designation given to an effeminate person, who could do nothing but play on the tympanum.

TYMPANUM, in Anatomy. See EAR.

TYMPANUM. Discharges of. The cavity of the drum of the ear is sometimes affected with a puriform ichorous discharge, attended with a loss of hearing, proportionate to the degree of disorganization which this part of the ear has sustained. In general, on blowing the nose, air is expelled at the meatus auditorius externus: and, when this is the case, it is evident that the discharge is connected with an injury, or destruction of the membrana tympani. However, when the Eustachian tube is obstructed with mucus, or matter, or when it is rendered impervious, and permanently closed by inflammation, the membrana tympani may not be perfect, and yet, it is clear, no air can in this state be forced out of the external ear in the above manner. An examination with a blunt probe, or with the eye, while the rays of the sun fall into the passage, should therefore not be omitted. If the membrane have any aperture in it, the probe will pass into the cavity of the tympanum, and the surgeon feel that his instrument is in contact with the osseous.

In this manner the affection may be discriminated from a herpetic ulceration of the meatus auditorius externus. The causes are various: in scarlatina maligna, the membrana tympani occasionally inflames, and though; all the ostioli are discharged, and, if the patient live, he continues quite deaf. An ear-ache, in other words, acute inflammation of the tympanum, is the most common occasion of suppuration in this cavity, in which, and the cells of the mastoid process, a good deal of pus collects. At length, the membrane tympani ulcerates, and a large quantity of matter is discharged; but, as the secretion of pus full goes on, the discharge continues to ooze out of the external ear.

Instead of stimulating applications, inflammation of the tympanum demands the rigorous employment of antiphlogistic means. Unfortunately, it is a too common practice, in this case, to have recourse to acid spirituous remedies. Above all things, the repeated application of leeches to the skin behind the external ear, and over the mastoid process, should never be neglected. As soon as the inflammation ceases, the degree of deafness, occasioned by it, will also disappear. This, however, does not always happen.

When an affection is situated in the cavity of the tympanum, Mr. Saunders seems to think, that the membrana tympani should not be allowed to burst by ulceration, but be opened by a small puncture. Sometimes the disease, of which we are treating, is more insidious in its attack: flight paroxysms of pain occur, and are relieved by flight discharges. The case goes on in this way, until, at last, a continual discharge of matter from the ear takes place. The disorder is destractive in its tendency to the faculty of hearing, and it rarely stops until it has so much disorganized the tympanum and its contents, as to occasion total deafness. Hence Mr. Saunders very properly defends the propriety of making attempts to arrest its progress,—attempts which are free from danger; and he censures the foolish fear of interfering with the complaint, founded on the apprehension, that bad constitutional effects may originate from stopping the discharge.

If the case be neglected, the tympanum is very likely to become carious; before which change, the disease, says Mr. Saunders, is most commonly curable.

Mr. Saunders divides the complaint into three stages: 1. A simple puriform discharge. 2. A puriform discharge complicated with funguses and polypi. 3. A puriform discharge with caries of the tympanum. As the disease is a local one, direct applications to the parts affected are chiefly entitled to confidence. Blisters and fomentations may be advantageously employed in aid of topical applications. Mr. Saunders's practice, in these cases, consists in administering laxative medicines, and fomenting the ear while inflammatory symptoms last, and afterwards injecting a solution of zincum vitriolatum, or cerufa acetata.

In the second stage, when there are funguses, he removes or destroys them with forceps, afterwards touches their roots with the argenteum nitratum, or injects a solution of alum, zincum vitriolatum, or argenteum nitratum.

TYMPANUM, in Architecture. See Tympanum.

TYMPANI, Chorda. See Chorda.

TYMPANUM, Tympan, in Mechanics, is a kind of wheel placed
placed round an axis, or cylindrical beam, on the top of which are two levers, or fixed flaves, for the more easy turning the axis about, in order to raise a weight required. The tympanum is much the same with the peritrochium; but that the cylinder of the axis of the peritrochium is much shorter and less than the cylinder of the tympanum. See Axis in Peritrochio.

TYPANUM of a machine is also used for a hollow wheel, in which one or more people, or rather animals, walk to turn it; such as that of some cranes, calenders, &c.

TYPANUM, Lat. a drum, in Antiquity; but in modern Music, it is equivalent with tymbale, or a pair of kettle-drums; which see. See likewise Timpano, Itat. for a kettle-drum.

TYPHAEI, in Ancient Geography, a people of Thrace, towards the sources of the Peneus. Strabo.

TYNA, a river of India, in the eastern part of the peninsula on this side of the Ganges, according to Ptolemy; marked by D'Anville to the N. of Mallarpha.

TYNAN, in Geography, a small poft-town of the county of Armagh, Ireland; 69 miles N. by W. from Dublin.

TYDRALE, William, (named also Hutchinson,) in Biography, a learned martyr to the Reformation, was born towards the latter part of the fifteenth century, on the borders of Wales, but the precise place of his nativity is not known. He received part of his education at Magdelan-Hall, Oxford, where he imbibed the doctrines of Luther, which caused his being dismissed from Wolley's new college of Christ-church, into which he had been admitted; so that he removed to Cambridge, where he took a degree. From hence he removed to Gloucestershire, to take the charge of Sir John Welch's children; and, during his residence here, he tranlated Erasmus's "Enchinizacion Militis Christiani" into English, for the benefit of the family with which he resided, and he often preached in and about Bristol. By the company which visited Sir John, Tyndale was reproached as a heretic, and articles were preferred against him by the chancellor of the diocese, so that he was under a necessity of removing to London, where he preached at St. Dunstan's in the Well. Dif forums of being admitted one of bishop Tofall's chaplains, he made application for that purpose, but was disappointed. In a retirement near London, he prepared a translation of the New Testament into English, which he accomplished, by unwearied industry, in about half a year; but the times would not admit of its publication. The author therefore withdrew to the continent, and at length took up his abode at Antwerp; and here he completed his work, which was printed in 1526, 8vo., without a name. The number of copies was 1,500, most of which were bought in England, and indifferently circulated. The zealous papists were alarmed, and foreseeing the diffusion of error and heresy, obtained orders from Warham, archbishop of Canterbury, and Tofall, bishop of London, that those who possessed any copies should deliver them up on pain of excommunication. Tofall procured all that were uncollected at Antwerp, and having purchased them, they were brought over and burnt at St. Paul's Cross. This circumstance favoured Tyndale's design, who took occasion to prepare a more correct edition, which was printed in 1534; and cheaper editions increased the circulation. In order to discourage and restrain these measures for differminating the Scriptures, Sir Thomas More ridiculed Tyndale's version in a dialogue in 1529, to which Tyndale replied: and the king, in a court of flar-chamber in 1531, with the concurrence of the prelates, univerities, and clergy, pronounced a severe condemnation of it, together with other heretical books. Tyndale, however, persevered with undaunted resolution, and engaged in a translation of the five books of Moses from the Hebrew. But in a voyage to Hamburg he was shipwrecked, and lost his books, papers and money. At Hamburg, where he at length arrived, he met with Miles Coverdale, and cooperating in their labour, they completed the Pentateuch, and printed it in 1530. Tyndale published a translation of the prophecy of Jonah, with a prologue, in 1531, and thus ended his labour on the Old Testament. At Antwerp he took up his residence in 1534, as a place of safety; but Henry VIII. and his council employed a perfon to betray him under the mask of friendship, and he was conveyed as a prisoner to Vilvorden, where he remained for a year and a half. At length, in 1536, he was brought to trial upon the emperor's decree at Augsburg; and here he was condemned, and strangled at the stake; and his body was reduced to ashes. He expired with uttering this prayer, "Lord, open the king of England's eyes!" It is needful to make any reflection on the conduct of such savage percutors, who thus treated a man of irreproachable manners, and who was pronounced, by the emperor's procurator, who assisted in his condemnation, "Homo doctus, pius, et bonus," for no other crime besides that of enabling Christians to peruse a book which is the only authoritative director of their faith and practice. Tyndale's other works were introductions to, and comments upon, parts of Scripture. Biog. Brit.

TYNDARIDÆ, in Mythology, a name given by the poets to Castor and Pollux, the sons of Jupiter and Leda. Though, according to the fabile, Pollux and Helena proceeded from the egg which Leda had conceived by Jupiter, and were therefore immortal; whereas, out of another egg, which she conceived by Tyndarus, her husband, came Castor and Clytemnestra, who were mortal. See Castor and Pollux.

TYNDARIS, in Ancient Geography, Pandarri, a town of Asia, in the Colchide, on the right bank of the Phasis, E.N.E. of Circeum, and S.W. of Cyta (Cattisii.) Pliny.

—Alla, a town of Sicily, towards the S.W., which was a Roman colony. It is called by Ptolemy Tyndaris.

TYNDIS, DANDA, a port of India, upon the coast of the country denominated Lymryca, according to the Ptolemy of the Erythraean sea.

TYNDIS, Tanaon, a river of India, in the peninsula on this side of the Ganges. Ptolemy.

TYNE, in Geography, a river of Scotland, which rises a few miles S. of Dalketh, crofses the county of Haddington, and runs into the German sea, N. lat. 56° 2'. W. long. 2° 38'.

TYNE. See TINE.

TYNEMOUTH, a townhip in the eait division of Castle-Ward, in the county of Northumberland, England; is situated on the banks of the river Tyne, 9 miles E.N.E. from Newcastle, and 286 miles N. by W. from London. It is a place of remote antiquity; and recent discoveries have proved that the Romans had buildings here. It is chiefly noted for its ancient monaftry, which is reckoned to be one of those founded by Oswald, the first Christian king of Northumberland. Great local facility was soon attributed to it, and several kings and other illustrious personages were buried here. St. Here bald, the companion of St. John of Beverley, was abbot here at the beginning of the eighth century; but before the end of it, the monastery was plundered by the Danes, as it was again in the next century by the forces under Hungar and Hubba, and a third time in the reign of King Athelstan. The old church seems to have lain desolate for a century, till a short time before the Norman conquest, when Tofti, earl of Northumberland, rebuilt and
and endowed it. On the banishment of Totti, the Conqueror gave his possessions to Robert de Mowbray, who then became earl; he refounded Tynemouth priory, and filled it with Black monks from St. Alban's, to which abbey the priory was subordinate. In his conspiracy against William Rufus, he converted the place into a fortress, which, after a siege of two months, was taken by storm. The priory progressively increased in consequence. In 1244, the prior mediated a peace between England and Scotland; and soon after obtained a charter from Henry III., to hold a market in his manor of Bewickc. He also claimed a market for Tynemouth; but in a suit on that account, judgment was given against him. Many privileges and immunities were, however, obtained for the inhabitants. At the surrender of the priory, in 1539, its possessions were very large, having twenty-seven villas with their royalties, besides the impropriations of many churches; its annual income being estimated at 706l. 10s. 8d. The chief remains are those of the church, at the east end of which is a neat little chapel or oratory. Till 1659 the church was parochial, but being decayed and damaged during the civil war, another was erected, and completed in 1668; but the old cemetery is still much used in preference to the new one. The castle, erected by earl Mowbray, appears to have been a place of great strength. It was garrisoned in the reign of queen Elizabeth; and again in that of Charles I., when it was besieged and taken by the parliamentary forces. Little remains of this ancient fortress except a strong gateway, the approach to which has been recently flattened by the town. The village of Tynemouth is much frequented in the bathing season, and commodious warm and cold baths have been erected. Here are some considerable salt-works; and it is estimated that 700,000 chaldrons of coal are annually sent here to London. In the population return of the year 1811, the number of houses in this township is stated to be 930, and of inhabitants, 5834.—Beauties of England, vol. xii. Northumberland, by the Rev. J. Hodgson.

TYNIDRAM, or Thunodronum Colonla, Hydrous, in Ancient Geography, a town of Africa, mentioned by Ptolemy, and placed between two degrees W. of Sicca Veneria.

TYNECZ, or Tynez, in Geography, a town of Austrian Poland, on the Vistula; 4 miles S.W. of Cracow.

TYNNA, in Ancient Geography, a town of Affa, in the Lefter Armenia, and in the prefecture named Catsonna. Ptol.—Alfo, a river of India, on this side of the Ganges, the mouth of which was in the country of the Avari. Ptolemy.

TYNSBOROUGH, in Geography, a town of Massachusetts, in the county of Middlesex, containing 704 inhabitants; 31 miles N. of Boston.

TYNOWSTA, a river of Pennsylvania, which runs into the Alleghany, N. lat. 41° 29'. W. long. 73° 30'.

TYORA, in Ancient Geography, known as Matienza, a town of the Aborigines, on the coast of Latium; distinguished by a very ancient oracle of Mars.

TYP, in Geography, a harbour on the coast of China, at the entrance of the river of Canton, formed by several islands. The anchoring place is N. lat. 22° of E. long. 114° 40'.

TYPÆA MONS, in Ancient Geography, a small mountain of Triphylia, near the banks of the river Alpheus. It was a law of the Eleans, that any female who was surprized in attendance at the Olympic games, should be precipitated from this mountain, the reason of which law is said to have been, that the Athletes were naked in the exercises.

TYPE, Typus, formed from words form, figure, a copy, image or resemblance, of some model. The term type is used in use than its compounds prototype and archetype, which are the originals that are made without models.

Type is also a scholastic term, much used among divines, signifying a symbol, sign, or figure, of something to come.

In this sense the word is commonly used with reference to antitype, antitypes, which is the thing itself, of which the other is a type or figure.

Thus Abraham's sacrifice, the paschal lamb, &c. were types or figures of our redemption; and the brazen serpent was a type of the cross, &c.

Types are not mere conformities, or analogies, which the nature of things holds forth between them; nor arbitrary images arising merely from the casual resemblance of things; but there is farther required a particular institution of God to make a type, and a particular declaration of his that it is so.

Gale divides types into historical and prophetic. The first are those used by the ancient prophets in their agitations and visions: the second, those in which things done, or ceremonies instituted in the Old Testament, prefigure Christ, or things relating to him in the New Testament. Or, they are things which happened and were done in ancient time, and are recorded in the Old Testament, and which are found afterwards to defy or represent something which befell our Lord, and which relates to him and his gospel. E.g. Under the law, a lamb was offered for a sin-offering; and thus an atonement was made for transgressions. John the Baptist calls Christ "the lamb of God that taketh away the sins of the world," and St. Peter tells Christians that they are redeemed "by the blood of Christ, as of a lamb." Hence we infer and conclude that the lamb was a type of Christ; and upon considering it, we find that it has all that can be required to constitute a type; for it is in many respects a very just and lively representation of Christ. The lamb died for no offence of his own, but for the sins of others; so did Christ: the lamb could not commit sin by his nature, nor Christ by his perfection; the lamb was without bodily spot orblemish; Christ was holy and undefiled: a lamb is meek and patient; such was the afflicted and much injured Son of God.

These types are useful to persons who have already received Christlikeness upon other and stronger evidence, as they show the beautiful harmony and correspondence between the Old and New Testament: but they seem not proper proofs to satisfy and convince doubters, who will say perhaps, with the schoolmen, "theologia fymbolica non est argumentativa."

Unless we have the authority of the Scriptures of the New Testament for it, we cannot conclude with certainty that this or that person, or this or that thing mentioned in the Old Testament is a type of Christ, on account of the resemblance which we may perceive between them: but we may admit it as probable.

The ancient fathers, as well as the modern critics, have been greatly divided about the nature and use of the types and typical representations in the Old Testament; and it is this makes one of the great difficulties in understanding the ancient prophecies, and in reconciling the New and Old Testament together.

There is no denying but that there were some types which the divine wisdom instituted to be the shadows and figures of things to come; and yet people run into an excess of those ways; some looking for types in every thing, like Origen, who discovered mysteries in the very cauldrons of the tabernacle. A prudent man should be contented with the more sensible and obvious ones, nor propone any without.
without proving them as much as possible, and shewing that they were really intended for types, in order to justify the
solfidity of the reasoning of the apostles, who argued from them.

An author, in reference to this subject, maintains, that
not the fathers only, but St. Paul himself, was of the opinion,
that Christianity was all contained in the Old Testament,
and was implied in the Jewish history and law; both
which are to be reputed types and shadows of Christianity.

In order to which, he quotes Hebrews, viii. 5. x. 1. and
Coloss. ii. 16, 17. He adds, that the ritual laws of
Moses, being in their own nature no other than types
and shadows of future good things, are to be considered as
having the effect of prophecies. This is likewise the sense
of Mr. Whitton, and others; but the same author even quotes
our Saviour speaking in behalf of this typical reasoning in
that passage, Matth. xi. 13. where he affirms that, "the
law prophesies; and that he came to fulfill the law as well
as the gospel." (Matth. v. 17. Diff. of the Grounds, &c.)

An ingenious divine takes this occasion to observe, that
had the ancients, with the modern retainers to the typical
way, expressly designed to have exposed Christianity, they
could not have done it more effectually than by thus making
everything types and prophecies.

Not that he denies the reality of such things as types. It
is manifest there were many under the Old Testament; such
were Zechariah's staves, beauty, and bands, ch. xi. 7. 10.
14; such was Hosea's adulterous wife, chap. i. 2; and such
were his children, ver. 4. 6. The prophets designed by
these to prefigure future events; but in these infinences the
reader is at once, by the declaration of the prophet, made
to understand, and not left to his own conjectures
about them after the events are over.

In effect, all that is urged from Scripture for the typical
or allegorical interpretations of the Jewish law, history,
ceremonies, &c. it is asserted, may be set aside, without any
violence to the Sacred Text, which may be explained on
more natural and intelligible principles, and more consistantly
with grammar.

The word 

τύπος

we have observed, literally denotes no
more than a copy or impression of any thing; and accordingly,
in our translation, we find it sometimes rendered by

print, sometimes by figure, sometimes by fashion, and sometimes
by form.

Hence also the word is figuratively applied to denote a
moral pattern; in which sense it signifies no more than an
example and similitude.

Again, the word 

αὐτότυπος, antitype,
in Scripture, signifies
any thing formed according to a model or pattern; and thus,
in the Epistle to the Hebrews, the tabernacle, and the
holy of holies, being made according to the pattern shewn
to Moses, are called antitypes, or figures, of the true holy
places. In the like sense, St. Peter, speaking of the
flood and the ark, by which eight persons were saved, calls
baptism an antitype to them; by which he expresses no more
than a similitude of circumstances.

The other words used in Scripture to imply a future
event, prefigured by some foregoing act, are—

τύχωμα, rendered by imitation and example; and 

σώμα, shadow.

Such being the import of all the terms used in the New
Testament writers, seeming to imply any prefiguration of
future events under the Gospel, it is observed,

1. That to argue from types, is only to argue from examples or similitudes; and, consequently, that all inferences
drawn from such reaonings are no farther conclusive than reaonings from similitudes are. The intent of similitudes
is only to help to convey some ideas more clearly or strongly;

so that to deduce consequences from a simile, or infer any
thing from other parts of the simile, than what are plainly
similar, is absurd.

The same author also alleges, 2. That it cannot be
proved, that the ceremonies of the Mosaic law were ever
designed to prefigure any future events in the state of the
Melliah's kingdom. No such declared prefigurations are
mentioned in the writings of the Old Testament, whatever
notions prevailed among the writers who immediately
followed. It is granted, that the apostles argued from the
rites in the Mosaic institution; but this (he says) appears to
have only been by way of illustration and analogy.

There is certainly a general likeness in all the dispensations
of Providence; an analogy of things in the natural as
well as the moral world, from which it is easy arguing by
way of paracy, and it is very just and usual so to do; but that
one of these dispensations was therefore given to prefigurize
another that was future, can never be proved, unlefs it be
expressly declared.

It is in the same way of similitude (he maintains) we are to
understand St. Paul, where he says, "that Christ our pass-
over is sacrificed for us." And thus we are to understand
John the Baptist, when he calls our Saviour the "Lamb of
God." There was this similitude of circumstances, that
Christ was slain on the same day with the paschal lamb;
that he died about the same time of the day when the priests
began their heel; that not a bone of the one or the other
was broken. Add, that as the paschal lamb was without
blemish, so was Christ without sin. From these, and other
circumstances, the apostle applied the term 

πασχαλις

to Christ.

Thus, also, we are to account for what St. Paul calls the
baptism of the children of Israel in the cloud, and in the
sea; and for the comparison between the high-priest entering
the holy place every year, and Christ entering into heaven.

TYPE, τύπος, is also a name given to an edict of the em-
peror Constanl II. published in 648, to impose a general
sentence both on the orthodox and the Monothelites.

It had the name of type, as being a kind of formulary of
faith; or rather a form on which men were to regulate their
conduct.

The type owed its original to Paul, patriarch of Con-
stantinople, who persuaded that emperor to take away the
ephes, compiled and hung up in all the public places by
Heraclius (as occasioning great complaints from the ortho-
dox, by its favouring the Monothelites); and to publish an
edict to impose sentence on both parties.

But such kinds of pacifications are held inexplicable in
matters of religion; accordingly pope Theodore soon pro-
cured the patriarch Paul to be depos'd; the type was ex-
amined in the council of Rome, consisting of a hundred and
five bishops, in 649, and condemned; and an anathema
was pronounced against all such as admitted either the impious
ephes or τύπος.

TYPE, Typhas, is also used to denote the order observed
in the intention and remission of fevers, pulses, &c.

Type, among Letter-founders and Printers, denotes the
name with letter. See Foundery.

TYPHA, in Botany, Cat's-tail, or Reed-mace, τύφος of the
ancient Greeks, from τύφω, a bog or marsh, of which situations
the plants of this genus are among the most conspicuous in-
habitants. They are often vulgarly mistaken for the Bull
rush, a very different plant. (See Scirpus, sect. 2.)

TYPHAE, one of Jullien's natural orders, the eighth of his general series, the second of his second clas. Its name is derived from one of the two genera which constitute this order, (see Typha); the other being Sparganium, which the reader will find in its proper place.

The second of Jullien's classes is formed of monocotyledonous plants, whose stamens are inserted below the germen. Their calyx is either of one or more leaves, or wanting. Corolla (in Jullien's opinion) none. Stamens inferior, mostly definite in number. Germen superior, simple; style either one or more, or wanting; stigma simple or divided. Seed solitary, naked or covered; or the fruit is of one cell, with one or many seeds. Leaves mostly alternate and sheathing. Flowers sometimes distinct in sex, by the failure of one or other of their organs of impregnation.—The orders are four; Aroides, Typhæ, Cyperoides, and Graminae; for the two last, see Calamaris and Gramina. The Aroides consist of Ambrosia, Zeaera, Arum, Colla, Dramantum, Pothos, Houttuinia, Orontium, and Acorus.

The Typhæ are thus characterised. Flowers monoeious; the males aggregate, triandrous, with a three-leaved calyx; females likewise aggregate, with a three-leaved (rather, we would say, many-leaved) calyx; germen superior; style simple; seed solitary. Leaves all alternate and sheathing. Plants herbaceous and aquatic.

Mr. R. Brown makes the Typhæ of Jullien but a section of his Aroidæ. He observes that their seeds are pendulous; those of Sparganium each in a dry drupæ, those of Typhæ in that kind of membranous clove coffyle termed by Gærtner utriculus.
TYPHIUM, a name used by some authors for colt’s-foot. TYPHIUM, in Ancient Geography, a mountain of Greece, in Boeotia.

TYPHLE, or TYPHLINE, a name by which some authors have called the fifth more usually known by the name of the acus.

TYPHLINUS, in Zoology, the name by which the Greeks, and from them others, have called the cecilia, or slow-worm.

TYPHLOSIS, from τυφω, blind; blindness.

TYPHODES, Febris, in Medicine. See Typhus.

TYPHOMANIA, probably from τυφω, smote, and μασσε, phrenesy, but the propriety of which is not very obvious, a term used by the older writers in medicine to denote a state of disease in which lethargy was combined with delirium, or, as some have stated, an apparatus with actual watchfulness: whence the appellation has been deemed synonymous with coma vigilia. A more accurate pathology has diffused these vague distinctions; for every degree of morbid dormolency, from lethargy up to complete apoplexy, appears to be the same in kind, differing only in violence. See Apoplexy, Coma, and Lethargy.

TYPHON, or Typhus, in Mythology, the name of one of the rebel giants.

The fable of Typhon is one of the most mysterious among the ancient mythologists. The Greeks and Latins, depending upon traditions received from the Egyptians, describe him as a horrid monster, produced, as they say, from the Earth by the jealous Juno, in order to avenge herself of Latona, her rival. Hefiod says, that this giant was the son of Tartarus and Terra. Manilius expresses himself to this purpose:—

"----- Merito Typhonis habentur
Horrenda fedes, quern Telus fesva profudit,
Cum bellum Coio peperit."

Apollophanus makes Typhon the most terrible of all monsters; describing him as having a hundred heads, and as being able to devour flames and flames to destroy, that he equally terrified gods and men. His body, whose upper part was covered with feathers, and the extremity entwined with serpents, was so vast, that he touched the skies with his head. His wife, says this author, was Echidna, and his offspring were the Gorgon, Geryon, Cyscerus, the Hydra of Lerna, the Sphinx, and the Eagle which preyed upon the unfortunate Prometheus; in a word, all the monsters that were hatched in the country of fables. Hyginus adds, that Typhon no sooner sprung from the earth, than he resolved to declare war against the gods, and to revenge the overthrow of the giants. A contest took place between Typhon and Jupiter, which, after various dreadful conflicts, terminated in the defeat of Typhon, who, being pursued by Jupiter and assailed with thunderbolts, was at last driven into Sicily, and there buried under mount Etna. The conjectures of modern authors in their attempts for explaining this fable have been very various. Some, among whom is G. Vossius, are of opinion that Typhon was the name of Og, king of Bashan. Bochart supposes that he was the same as Enceladus. Some others think that Typhon was king of Sicily, and others that he was the same as Efu. Huet apprehends that Typhon was the legislator of the Hebrews, become extremely odious to the Egyptians by the destruction of their first-born. Banier supposes, that Typhon and his brother Osiris were much more ancient than Moses; and that the idolatrous worship of the oxen Apis and Mnevis, consecrated to Osiris, was spread through Egypt before the Israelites entered there, since it was upon this model, according to Selden, that Aaron made the golden calf which the Jews worshipped in the wilderness. A dispute arose between Typhon and Osiris, and he was drowned, as it is said, on the authority of Herodotus, in the marshes of the lake Serbonis, or killed in a battle fought with his nephew Orus, whence the Egyptian priests made the people believe, that the gods interred themselves in avenging Osiris, by destroying his persecutor with a thunderbolt. Thus, however, perished the cruel tyrant of Egypt, and the kingdom was left to young Osiris, under the regency of his mother Isis. For further particulars we refer to Banier’s Mythology, vol. i.

TYPHON, or Typho, in Physics. See Whirlwind.

TYPHONIS INSULA, in Ancient Geography, an island of the Mediterranean sea, upon the coast of the Troade.

TYPHUS, Febris Typhos, in Medicine, a term used by Hippocrates to denote a fever of an inflammatory character, probably derived from τυφω, I inflame. The disease, however, not having been very distinctly described by that writer, other authors have applied the term to fevers of a nervous character, and it is now received as the appellation of ordinary low fever, and islands in opposition to inflammatory fever. In short, by the word typhus, we now understand the common contagious fever of this and other northern climates, which has received various appellations, according to the situations in which it has prevailed, or to some of its symptoms, or to the degree of its severity; such as hospital, gazol, and ship fever; petchial, spotted, or purple fever; putrid, malignant, infectious fever; continued fever, &c. This common fever, or typhus, differs essentially from the eruptive fevers, small-pox, morse, chicken-pox, and scarlet fever, which affect any individual but once during life; it differs from the plague of the East, which is accompanied with buboes, and from the yellow fever, the bilious remittent fever of hot climates; and from the remittent and intermittent fevers, the effect of marsh effluvia, in more northern latitudes: but, under all the circumstances and denominations above alluded to, it appears to be of the same nature, and is usually understood by physicians in Europe, when they speak of fever simply. As we have entered at great length into the nature of this disease, and the doctrines of pathologists respecting it, under its proper head, it would be superfluous to enter more largely into the subject here. See Fever.

TYPIC FEVERS, an appellation given by medical writers to those fevers which are regular in their attacks, and in their general period: they are thus called by way of distinction from the erratic, which observe no regular type, or determinate appearance.

TYPOGRAPHY, formed from τυγγω, τυγγω, and χρώμα, writing, the art of printing.

TYPOLITES, or Typolithus, formed of τυγκω, types, and λίθος, stone, in Natural History, names given to stones or fossils, on which are impressed the figures of various animals and vegetables. See Stones, Adventitious Fossils, &c.

TYR, in the Ethiopian Calendar, the name of the fifth month of the Ethiopian year. It commences on the 25th of December of the Julian year.

TYR, in Mythology, a name given to a warrior deity, the protector of champions and brave men, invoked by the ancient northern nations.

The third day of the week was consecrated to Tyr, from whom, it is said, the name given to it in most of the northern languages is derived; it is called in Dan. Tjoflag, or Tiflag; in Sued. Tjoflag; in English, Tirftay; in Low Dutch, Diuglag; and in Latin, Dies Marii: whence it is inferred, that Tyr answered to Mars.

The
The Germans, in High Dutch, call this day Eric-haag, from the word heric or harce, a warrior, which comes to the same thing. 

Tyr must be distinguished from another deity called Thor. 


TYRA, in Ancient Geography, a town of European Sar- 
matica, upon the banks of the river Thrasus; sometimes called Ophiula. 

Tyra, in Geography, a river of Germany, which runs 

into the Belin, one mile W. of Kelbra, in the county of 

Schwartzburg. 

TYRAMBE, in Ancient Geography, a town of Asiatic Sar- 
matica, 660 fladia from the river Rhombites, according to 

Strabo; but Ptolemy places it between Azabites Mitra and 

the mouth of the river Attica. 

TYRAN, or Tyrens, in Geography, a small island in the 

Red Sea. N. lat. 27° 40'. E. long. 34° 48'. 

TYRANNICIDE, formed of tyrannus and cede, i kill, 

denotes the act of killing a tyrant. 

TYRANNIO, in Biography, a Greek grammarian, was 

a native of Amida, in Pontus, and a disciple of Dionysius of 

Thrace at Rhodes. Upon the conquest of the kingdom of 

Mithridates by Lucullus in the year B.C. 70, Tyrannio 

became a captive, but was liberated by Murena, and taken 

to Rome, where he opened a school, in which he gave in- 

struction to the son and nephew of Cicero, and also to 

Strabo. In this situation he acquired considerable wealth, 

and accumulated a library of more than 35,000 volumes. 

Among other valuable works which he possessed, he pre- 

ferred the writings of Aristotle and Theophratus, which 

he obtained from the librarian of Syria, and which he after- 

wards imparted to Andronicus of Rhodes. Tyrannio lived 

to an advanced age; but none of his works are extant. 

Bayle. 

TYRANNUS, in Ornithology, a name given by some to 

the lanius, or butcher-bird, a species of hawk not larger than 

a thrush, but a very fierce and fatal enemy to the small 

birds. See Lanius. 

TYRANNY, in Political Government, is the exer- 

cise of power beyond right, to which nobody can have a right; 

and thus it is distinguished from Ufurpatian (which fee) 

or the exercise of power which another hath a right to: and 

it is the use of power which any one polleth, not for the 

good of those who are subject to it, but for his own private 

separate advantage; when the governor, however, intituled, 

makes not the law, but his will the rule; and his command 

and actions are not directed to the preservation of the 

property of his people, but the satisfaction of his own ambition, 

revenge, covetousness, or any other irregular passion. 

It is a mistake to think this fault peculiar to monarchies; 

other forms of government are liable to it as well as that. 

For wherever the power that is put in any hands for the 

government of the people, and the preservation of their 

property, is applied to other ends, and made use of to im- 

povery, haras, or seduce them to the arbitrary irregular 

commands of those that have it, there it becomes tyranny, 

whether those who thus use it are one or many. 

Accordingly we read of the thirty tyrants at Athens, as 

well as one at Syracuse; and the intolerable dominion of the 

decemviri at Rome was nothing better. Every wan- 

ton and saucy restraints of the will of the subject, whether 

practised by a monarch, a nobility, or popular assembly, is 

degree of tyranny. 

Whenever the constitution of a state veils in any man, 

or body of men, a power of destroying at pleasure, without 

the direction of laws, the lives or members of the subject, or 

of alienating their property, or of depriving them of their 

liberty at pleasure, such constitution is tyrannical. In a 

word, wherever law ends, tyranny begins, if the law be 

transgressed to another's harm. And whoever in author- 

ity exceeds the power given him by the law, and makes 

use of the force he has under his command, to compacts that 

upon the subject which the law allows not, ceases in that to 

be a magistrate, and, acting without authority, may be 

opposed as any other man, who by force invades the right 

of another. The end of government, whatever be its name or 

nature, is the good of mankind: and upon this principle, 

whoever uses force without right, as every one does in 

society who does it without law, puts himself into a state of 

war with those against whom he uses it; and in that state 

all former ties are cancelled, all other rights cease, and every 

one has a right to defend himself, and to redress the aggrieved. 

If it be asked who shall be judge; whether the prince or 

legislative act contrary to their will? The answer is obvious, 

the people shall be judge; for who shall be judge whether 

the trustees or deputy acts well, and according to the 

trust repose in him, but he who deports him, and must, 

by having deputed him, have still a power to dissuade him when 

he fails in his trust? If this be reasonable in particular 

cases of private men, why should it be otherwise in that of 

the greatest moment, where the welfare of millions is con- 

cerned; and also where the evil, if not prevented, is greater, 

and the redress very difficult, dear, and dangerous? Locke, 

of Civil Government, ch. xviii. and xix. in his Works, 

vol. ii. p. 214, &c. 

TYRANT, Tyrannus, among the Ancients, denoted 

simply a king or monarch. 

But the ill use several persons invested with that character 

made of it, it has altered the import of the word, and tyrant 

now carries with it the idea of an unjust and cruel prince, 

who invades the people's liberty, and rules in a more de- 

potic manner than the laws of nature, or the country, do 

allow. 

The term tyrant, we are told, became odious among the 

Greeks, those zealous lovers of liberty, almost as soon as 

introduced; but Donatus affirms us, it was never taken to 

among the Romans till the latter ages of that empire. 

The motto of a tyrant is, Oderint dum metuant. Rowland 

contends, that this word, as well as the correspondent Greek 

and Latin, is derived from tir, Welsh and Erfe, land, and 

rbaner, Welsh, to bear; q. d. tirbaner, a earcer or divider of 


TYRANTS, Thirty, an appellation under which the 

thirty tyrants, established by the Lacedaemonians in Athens, 

in order to enslave and keep it in slavery, are denominated. 

Thrafulus formed the generous design of driving them from 

Athens, and succeeded; upon which event Cornelius Nepos 

has remarked, that many have defied, and few had the 

happiness to rescue their country from a single tyrant! but 

Thrafulus delivered his from thirty. 

One of the means which these tyrants used for carrying 

on their scheme of enslaving the Athenians, was the ordering 

of the suffrages of the Alopeagites to be public, that they 

might manage them as they pleased. See Montefieu's 


TYRAS, in Ancient Geography. See Dniestr. 

TYRAWLEY'S Point, in Geography, the south-west 

extremity of Tresvanion's island, in the South Pacific ocean. 

S. lat. 10° 48'. E. long. 163° 41'. 

TYRBE, thyreus, in Antiquity, a festival celebrated by 

the ancients in honour of Bacchus. 

TYRE, in Ancient Geography, a city of Phoenicia, distant 

23 miles from Sidon, its rival, according to the Itinerary of 

Antoninus. (See Sidon.) This city was anciently de- 

ominated
minated Sor, whence it derived its name (see Sur), and was called the daughter of Sidon. It was situated upon the sea. Tyre has been distinguished, in the order of time, into three cities; as Tyre on the continent, or Pale-Tyre (old Tyre), Tyre on the island, and Tyre on the peninsula, after the island was joined to the main land. There were four different places in Phoenicia which bore the name of Tyre. Tyre, of which we are now speaking, had two havens, one looking towards Sidon, the other towards Egypt. These havens were formed by the isthmus which joined the island to the main land, and were called, the one open, the other close. The former looked towards Egypt, and was the most southern of the two: it was accordingly called the Egyptian port. The Eristi Edrisi says, that one of these ports had an arch over its entrance, through which the shipping passed; and that it was fortified with a chain drawn across it. These bays or ports are still pretty large, and, in part, defended from the ocean by a long ridge, resembling a mole, stretching directly out on both sides from the head of the island; but whether these ridges are walls or rocks is uncertain; they were most probably walls. (See Sur.) Tyre, including Pale-Tyre, was 19,000 paces in circumference, whence it is plain, that Tyre on the island, and old Tyre on the main, were considered as but one city, after the isthmus was thrown up between them; and possibly they might have had buildings contiguous to each other. If Pliny's numbers are right, the old city must have been by much the most extensive part of the whole, and especially as the place appears at this day. According to Pliny, the island was but 700 paces from the continent: whereas Strabo says that it was 30 fadia, or somewhat more than three of our miles from Pale-Tyre; and according to the same geographer, Tyre was wholly an island, like Aradus, excepting the artificial isthmus, which formed it into a peninsula. The city by itself, according to the statement of Pliny, measured only twenty-two furlongs, or not quite three of our miles, and this is too great an allowance, if we may rely on our modern accounts; which reprent Tyre itself as a small city in extent, though it covered the whole island; and the scantiness of the space on which it stood, induced the inhabitants to raise their buildings so high, which plan they would have otherwise avoided, from fear of earthquakes, that threatened them with destruction. At present the island appears to have been, in its natural state, of a circular form, hardly containing forty acres of ground; and the foundations of the wall which surrounded it are still to be seen at the utmost margin of the land. If it be true then, that the whole circuit of the old and new Tyre amounted to 19,000 paces, or 19 Roman miles, and that they were dilant from each other but 33 fadia, or 3½ of the same miles, it is evident that the old city stood upon a much greater space of ground than the new. A considerable part of the island was, what we call, made ground. The buildings were in general spacious and magnificent; and above the reef appeared the temples built by Hiram to Jupiter, Hercules, and Astarte. The walls of Tyre were 150 feet high, proportionably broad, and firmly built of large blocks of stone, bound together with white plaster. For its present reduced and ruinous state, see Sur.

Herodotus ascribes to Tyre situated on the island a very ancient epocha: and its priets, according to his account, reprent that their temple, which was of greater antiquity than the city, subsisted about 450 years before the Christian era. Josephus refers the foundation of this city to 1255 years B.C., whilst the Israelites were under the government of judges. But these dates cannot be applied to insular Tyre, which was more modern than that of continental Tyre, which is said to have been built and known before the Israelites took possession of Canaan. (See Joshua, xix. 29.) The Sidonians, with a view of extending their commerce, sent out a colony to ancient Tyre, which contributed very much to its augmentation; and hence it became powerful, eclipsed the metropolis, and became itself the metropolis of several cities, which it furnished with colonies. The Tyrians were not known in the time of the Trojan war, according to Strabo (ib. xvi.) and Homer, who often speaks of the Phoenicians, mentions only the Sidonians, under which general appellation the Tyrians were probably comprehended.

Josephus and Theophilus Antiochus begin the succession of kings of Tyre with Abibal, upon the authority of Menander the Ephesian, and Dias a Phoenician, authors of credit. Abibal was contemporary with David, and his reign is referred to 1056 B.C. He was succeeded by his son, Hiram (1046 B.C.), who maintained an intimate friendship with David and Solomon: under this prince the kingdom of Tyre was very prosperous and flourishing; the city was enlarged, and by means of a dam, joined to the temple of the Olympian Jupiter, standing in an island. He also built two temples, one to Hercules and another to Astarte, enriching them with donations. Besides erecting a statue to Hercules, he repaired the temples of other gods, and endowed them to a very great value. Titian relates, on the authority of three Phoenician historians, that he gave his daughter in marriage to king Solomon, who, by her influence, was induced to worship Astarte, the goddess of the Sidonians. Hiram, having lived fifty-three years, and reigned thirty-four, was succeeded by his son, and a series of other princes, until Nebuchadnezzar, king of Babylon, laid siege to the city, in the reign of Ithobal II. 585 years B.C. This siege lasted thirteen years (see Ezekiel, xxvi. 8, &c.;) and at last it was taken by Nebuchadnezzar and utterly destroyed. Some Phoenician historians have said, that Ithobal was succeeded by Baal; nor is it improbable, that the inhabitants of Tyre, during the siege, retreated with their effects to an island about half a mile distant from the shore, where they built for themselves a new city; which, after the destruction of the old town, submitted to Nebuchadnezzar, who appointed Baal to be his viceroy; and that, upon Baal's death, in order to render the government more dependent on the Assyrians, he changed the royal dignity into that of temporary magistrates, called suffetes, or judges, 562 years B.C. After Tyre had been thus governed for some years, the royal dignity was restored, and Balator created king, 556 B.C. Both he and his successors were dependent on, and tributary to the Assyrians for seventy years; at the expiration of which they recovered, according to the prophecy of Isaiah (ch. xxxiii. 15, 17), their ancient liberty. In the year 480 B.C., under the reign of Marten, the Tyrians, as well as the other Phoenicians, were tributaries to the Persians, though they had a king of their own, being favoured by the Persian monarchs on account of the services which they rendered to them in their naval expeditions. About this time reigned Strato, whose accession to the throne, in consequence of the insurrection of the slaves, is particularly related by Justin, lib. xviii. cap. 3. He was succeeded by his descendants, among whom was Azelmic, in whose reign happened the memorable siege and reduction of Tyre by Alexander the Great. This siege commenced about the year 333 B.C. which was rigorously carried on, and obstinately reafifted by the Tyrians. At length Alexander, having battered down the walls, took the city by storm, 332 B.C., after seven months siege, and fully executed the sentence which the Tyrians had, by their pride and other
vices, drawn down upon themselves and their country. The city was burnt down to the ground, and the inhabitants, (those whom the Sidonians secretly conveyed away in their ships excepted,) either destroyed or enslaved by the conqueror, who, upon his first entering the city, put 8000 to the sword, caused 2000 of those whom he took prisoners to be crucified, and sold the rest, to the number of 30,000, says Arrian, for slaves. His cruelty towards the 2000 that were crucified was highly unbecoming the character of a generous conqueror, and reflects eternal disgrace upon his fame.

After the city was reduced, king Azelmic took sanctuary in the temple of Hercules, and was not only spurred by the conqueror, but restored to the throne, after Alexander had repeopled the place; for having cleared it of its former inhabitants, he planted it anew with colonies drawn from the neighbouring parts; and henceforth styled himself the founder of Tyre, a city which he had most ungenerously destroyed. From hence, having unchained Apollo, whose statue the Tyrians had fattened, during the siege, with golden chains, to the altar of Hercules, returning him thanks for his intention of coming over to the Macedonians, and offering sacrifice to Hercules, Alexander continued his march into Egypt. This city afterwards regained a considerable degree of power; for in the year 313 B.C. it sustained a siege against Antigonus of fifteen months, before it was compelled to capitulate. It afterwards belonged to several masters, until Antiochus the Great, who took possession of it in the year 218 B.C. It afterwards became subject to the Seleucids. Caius, a Roman governor, sold it to Marion, whose wealthy enabled him to purchase the principality. Tyre, formerly called Tyor (Jos. xix. 29.), renowned for its trade and the numerous colonies which it transplanted into several parts of the world, and the wars in which its inhabitants valiantly engaged, was in all its glory when Alexander took it, about 300 years after its capture by Nebuchadnezzar. Tyre was still in great repute in the time of our Saviour. (See Matth. xii. 21. xxv. 21. Mark, iii. 8. Luke, vi. 17.) It made a considerable figure in the reign of Herod Agrippa, who designed to wage war against it, if it had not secured peace by its deputies. (Acts, xix. 20.) When the apostle Paul travelled through this place, it had some Chiritian inhabitants. (Acts, xxii. 4.) In the second century it was a bishop's see; and St. Jerome tells us, that in his time it was the most famous and most beautiful city of Phoenicia, and a mart for all the nations of the world. This ancient father alleges this circumstance as an objection to the accomplishment of Ezekiel's prophecy (ch. xxvi. 14.), and replies to it, that the prophet's declaration is to be understood as intimating, that Tyre should no longer be the queen of nations, and enjoy the same authority and dominion as it possessed under Hiram, and its other kings, but should be subject to the Chaldeans, Macedonians, Ptolemies, and lastly to the Romans. Others have supposed, that the prophet does not speak of the ruin of Tyre by Nebuchadnezzar, and Alexander the Great, but of its final destruction, of which the latter events were forerunners. And indeed Tyre, as we have said, is now only a poor village, inhabited by fishermen (see Sun.); so that the prophecy is fulfilled, which declared, "that it should be a place for fishermen to dry their nets on." Ezekiel may also be explained by the prophet Isaiah (xxiii. 15.), who limits the destruction of Jerusalem to 70 years. But the prophecy of Ezekiel may be more satisfactorily explained, with Sir J. Marsham, Le Clerc, and other learned authors, who interpret it concerning Old Tyre, i.e. Palætyrus, which flooded a little lower on the continent, and the best materials of which were used by Alexander the Great, in making the isthmus which now joins Tyre to the continent. (See Q. Curtiius, i. iv. c. 2.) This Tyre was destroyed by Nebuchadnezzar, and never rebuilt. The inhabitants, finding themselves upon the brink of destruction, removed, as we have already said, with their wives and children, and most valuable goods, to the island of Tyre, where they built a city of the same name; so that Nebuchadnezzar, according to the prophecy (Ezek. xxix. 18.), was no gainer by his expedition. The Jews at Tyre, as Josephus informs us, suffered much from the Tyrians. This city was formerly the metropolis see of the province of Phoenicia. Tyre was transferred to the Arabsians, with the rest of Syria; and before it was reduced to its present miserable state, it was twice besieged by the Christians in the time of the Crusades, viz. in 1112, and again in 1124. It was unsuccessfully attacked by Saladin in 1192; but in 1291, Kabil, sultan of the Mamelukes, obtained it by capitulation, and razed its forts.

TYRESIO, in Geography, a sea-port town of Sweden, in Sudermanland; 9 miles S.E. of Stockholm.

TYR, a lake of Norway, in the province of Aggerhus; 15 miles N.W. of Christiania.

TYRLÆUM, in Ancient Geography, a considerable town of Afia, in Paphidia, called also Tyrox.

TYRINGHAM, in Geography, a town of Massachusetts, in the county of Berkshire, containing 1689 inhabitants; 140 miles W. of Bolton.

TYRIUM MARMOR, a name given by the ancients to a species of marble of a beautiful white, sometimes free from veins, and sometimes variegated with dusky blackish-grey ones. When pure, it was little inferior to the Parian, and often was used instead of it by the Iturians. See MARBLE.

TYRNAU, in Geography. See TIRNAU.

TYRNAU, a town of Moravia, in the circle of Olmutz; 14 miles N.W. of Olmutz.

TYRNITZ. See DYNITZ.

TYRNSSTEIN. See DIERNSTEIN.

TYRO. See TYRICUM.

TYROCINIUM, TYROCIUS, formed of tyro, a raw beginner, a novicite or apprenticeship in any art or science.

We have several writings under the title of tyricini; tyricium chymicum, tyrocinium chirurgicum, &c., containing the rudiments of those arts, accommodated to the apprehensions of beginners.

TYROL, in Geography, a citadel which gives name to the Tyrolese county; 1 mile N. of Meran. N. lat. 46° 37'. E. long. 11°.

TYROLESE, or Upper Austria, a county, bounded on the north by Bavaria, on the east by Salzburg and Carinthia, on the south by Italy, and on the west by Bavaria and the Grisons; in this circle are included the county of Tyrol Proper, the bishopric of Trent, and the bishopric of Brixen. The bishopric of Trent is situated to the south; the bishopric of Brixen occupies the north-east part; and the county of Tyrol the centre. This county is mountainous, and capable of making a powerful stand against an invading enemy; but the Tyrolian mountains, though covered with snow to the very utmost summits of them, are also fertile; where are found not only the finest woods, abounding in a variety of game, but also large and good corn-fields; or, where these mountains are barren, there are, for the most part, mine works, or excellent marble, of all colours. Corn thrives well in many, nay in most places here; and in some places flax. On the eminences grow also all sorts of fine fruits which Italy yields, and likewise small woods of chestnut trees, together with fine vines. Among the wild beasts here
there are chamois and wild goats. There are, likewise, in this county, several species of precious stones, as granites, rubies, amethysts, and emeralds, a species of diamonds, agates, cornelians, chalcedonies, &c. Hot baths and medicinal springs are found in several places; at Hall are profitable falk-pits. Not far from Schwartz is a mine of silver and copper; and some miles distant from the latter is also a mine work, which yields a very soft and malleable copper. The copper contains in it some silver and gold. Good lead, together with fine mineral colours, alum, vitrilo, and fine silver ore, are also found here. The principal rivers in this county are the In, or Inn, the Adige, the Lech, and the Iser. In this county are twelve towns and ten villages, which have markets. The common people here, exclusive of the sufficiency which the mines and falk-works yield them, have not much to earn; so that a great part of them seek for sufficiency out of the country, either by trade or labour. Tyrol was formerly a part of Rhetia, but, in the fifth century, the greatest part of it defended to the dukes of Bavaria, and this was afterwards reckoned in Noricum; but, over the southern part, the Longobards, at the same time, extended their dominion. The dukes of Bavaria appointed margraves here; but Henry the Lion, duke of Bavaria and Saxony, being, in 1180, put under the ban of the empire, by the emperor Frederic I., this laft dismembered the present province of Tyrol from Bavaria, investing therewith the margrave Berchtold, under the title of duke of Meran. Otto II., grandfons to this Berchtold, dying without male issue, in the year 1248, this county came to count Albrecht III., who resided at the citadel of Tyrol, gave up the title of duke of Meran, and ruled the whole country the county of Tyrol. Tyrol had, afterwards, frequently princes of its own, of the house of Aultria; the laft of whom, named Sigismund Francis, died in 1665, upon which the emperor Leopold received homage on that account, in person, at Inpruck; and by the peace of Preiburg it was ceded to Bavaria. The high sovereign colleges over Tyrol, when subject to the house of Aultria, were seated at Inpruck; and towards the maintenance of the military flate, it contributed yearly 100,000 florins.

TYRONE, a county of Ireland, in the province of Ulter, which is entirely inland, and very irregular in its shape. On the north it has the county of Derry; on the west, Donegal; on the south, Fermanagh and Monaghan; and on the east, Armagh, with Lough-Neagh. Its divisions from these counties are seldom marked by nature, but the river Blackwater bounds it for about 30 miles on the south-east and east, and the rivers Fin and Foyle for about 10 miles on the north-west. The greatest length from east to west is 43 Irish miles, or 544 English; and the greatest breadth 33 Irish, or 42 English. The area measures 457,700 acres, or 724 square miles Irish, which is equal to 751,387 acres, or 1163 square miles English. Dr. Beaufort states the number of houses at 28,704, which, at 4. per house, would give a population of near 185,000, or about 40 to each square Irish mile. As this was the statement in 1792, the increase must have been considerable. The number of parishes is only 35, and these have 38 churches. Most of these are in the diocese of Armagh, but there are some in the dioceses of Derry and Clogher. Tyrone is represented in the imperial parliament by two members for the county, and one for the borough of Dungannon. The northern part of the county is rough and mountainous. The Cairntogher and Manterly mountains occupy a large space; and to the south of these are the high hills called "Belfy Bell" and "Mary Grey." These produce very little, being in general wet and spongy. Where, however, gravel or any porous substance forms the sublustrum, the surface is dry and wholesome, and well calculated for pasture. The other parts of the county contain very good land; and some districts are remarkable for their fertility, especially the neighbourhood of Dungannon, extending eastwards towards the Blackwater, and about Cookstown. The produce of this county, and the flate of manufactures, agree in the leading features with those of the other northern ones. The farms, except in the mountainous districts, are usually small; and the produce in general oats, barley, potatoes, and flax. The linen manufacture is extensively carried on; and it gives a favourable idea of the industry of the inhabitants, to learn from the county survey, that much cultivated ground has been gained from the bogs and mountains. "In all parts of this country," said Dr. Beaufort in 1792, "cultivation is creeping, and that not slowly, up the sides of all the hills and mountains that are capable of improvement." In this county, the culture of the grains called firim was commenced by Dr. Richardson at Clonofede, near May, the excellencies of which have been laid before the public in various publications, and have attracted the attention of many eminent agriculturists. Many parts of Tyrone contain large quarries of lime-stone, though it is not generally used for manure. There are also many quarries of free-stone; and good mill-stones are hewn out of detached rocks. It is probable that iron-ore is abundant; but without greater plenty of fuel, it can be of no use. Clay fit for bricks, and for various kinds of pottery ware, is also found in many places. But that mineral which has engaged most attention is coal. At Coal-Iliffand, in the eastern part of the county, coal-works have been carried on with some success. Five pits were working in the year 1800, with the appearance of industry. There seemed, however, a want of encouragement; and the canal, which had been made from this place to the Blackwater, was choked up with mud and weeds. A similar account may be given of the colliers at Drumgal, near Dungannon; so that though above 140,000l. were expended from the national purse in making canals, independently of private exertions, the object has not been obtained; and the Newry canal, instead of conveying the Tyrone coal to that port, to be shipped for Dublin and other places, supplies the county through which it passes with English and Scotch coal. At the time of making these grants, from 1751 to about 1770, there was a surplus of the revenue, which was spent on various public works, but not always to advantage, and very seldom with economy. In the infancy above mentioned, the object was to save the large sums sent annually out of Ireland for coal, or rather to procure a supply of that article on lower terms than it was usually obtained. But though some advantage has arisen from the Newry canal, so great has been the expense attending it, and so complete the failure of all the other parts of the speculation, except for the supply of the adjoining country, as seems to illustrate the opinion, that the interference of government in such plans seldom succeeds, and that the grants intended to encourage them are too commonly abused and perverted. It has been said, that there are indications of a rich coalmine near the village of Drumquin, in the south-west of the county, and in a district abounding with iron-ore; and as this is only 12 miles distant from Lough Erne, a canal has been recommended; but since the union, and especially since the taxes have been pressed so heavily on all ranks, such speculations are not so readily adopted. The report of Mr. Griffith, the mining engineer of the Dublin Society, on the Ulter coal district, will throw much light on the subject; but his opinion, as expressed in his report on the
Tyr

Leinster district, is not favourable to the extent or value of that in the county of Tyrone. The rivers of this county are very numerous, so that it is well supplied with water for bleaching, &c. The principal river is the Mourne, which falls through the centre of the county from south to north. It rises in the mountains near Clogher, and receives several streams before it comes to Omagh, where it is joined by the Cameron from the south; and a few miles lower, by the Po from the west. At Newtown-Stewart the united streams of the Moyla, and another river from the mountains between Tyron and Derry; and at Ardstraw the Dergh, which flows from Lough Dergh, in the county of Donegal, add their stores. Thence it runs to the town of Strabane, below which it meets the river Fin, from the county of Donegal; and they proceed together, under the name of Foyle, to the sea, being navigable for large vessels. The river Blackwater, which is also navigable for about ten miles of its course, is of great service to the eastern part of the county. The Ballinderry passes by Cookstown, and afterwards becomes the northern boundary, until it flows into Lough Neagh. The other streams are inconsiderable, and there are no lakes which deserve notice. The towns of this county are not large. Omagh is the county-town, probably on account of its central situation; for it is inferior to Dungannon or Strabane. Dungannon was the principal residence of the O'Neils, when chieftains of Ulter. These towns, and Cookstown, May, &c. are mentioned under their respective names. The country and inhabitants near Newtown-Stewart were much improved by the exertions of Lord Mountjoy, who was killed at the battle of Ros in 1798, fighting against the rebels, at the head of his regiment. His useful and benevolent plans have not, however, been neglected. About Fintona good flooring and ridge tiles are made, and a great variety of crockery ware for country use. Near Coal-Iland is a pottery, supposed to be the birth in Ireland for rough crockery ware, fire-bricks, and tiles for malt-kilns, which are of as good a quality as any imported. The fame clay made into small oblong pieces, and dried in the sun, is used for cleaning of leathers, &c. and is sent for this purpose to very distant places.

Having thus given an account of the present state of Tyrone, with respect to its productions and manufactures; it may be added, that when O'Neil, the descendant of the kings of Ulter, was compelled to submit to queen Elizabeth, he was created earl of Tyrone; and when his rebellion, in the reign of James I., occasioned the forfeiture of his possessions, this was one of the counties planted, that is, allotted to settlers, chiefly from Scotland, whose descendants are at present the principal landed proprietors.—Mr. E. Survey of Tyrone. Bean's Memoir of Map of Ireland, &c.

Tyrone, a township of Pennsylvania, in the county of Adams, containing 648 inhabitants.—Also, a township of Pennsylvania, in the county of Cumberland, containing 2604 inhabitants.—Also, a township of Pennsylvania, in Huntingdon county, containing 753 inhabitants.—Also, a township of Pennsylvania, in Fayette county, containing 980 inhabitants.

Tyrroot, a cirear of Hindooftan, in the subah of Bahour, bounded on the north by Morung, on the east by Purnah, on the south by Bogilipour, on the south-west by Haiypour, and on the west by Bettiah. Durbarung is the capital.

Tyrosis, τυροπ, formed of τυρος, chese, in Medicines, a coagulating or curdling of milk in the stomach, after the manner of chese.

Tyrrell, James, in Biography, a political writer and historian, was the son of Sir Timothy Tyrrell, kn., of Shotover, near Oxford, by Elizabeth, the only daughter of archbishop Usher, born at London in 1642, and admitted, in 1657, a gentleman-commoner of Queen's college, Oxford. Devoting himself to the study of the law at the Inner Temple, he was called in 1665 to the bar. But declining the practice of his profession, he retired at Oakley, in Buckinghamshire, and studied the history and constitutions of his country, of which he entertained more liberal sentiments than those with which he commenced his researches. In 1681 he published an answer to Sir Robert Filmer's patriarchal scheme, under the title of "Patriarcha non monachra; or, The Patriarch unmonarched." Having refused to assent to the abolition of the penal laws, and the tell again against popery, he was struck out of the commutation of the peace by James II. As a zealous friend to the Revolution, he vindicated King William's right to the crown in "Fourteen Political Dialogues," printed from 1692 to 1705; which were afterwards collected into one volume folio, with the title of "Bibliotheca Politica, &c." in which all the chief arguments, both for and against the late revolution, are impartially represented and considered. He also composed an abridgment of bishop Cumberland's work "De Legibus Naturarum," 1692, 8vo, of which work a second edition, corrected and enlarged, was printed in 1701. But his principal performance was "The General History of England, both Ecclesiastical and Civil, from the earliest Accounts of Time," concluding with the reign of Richard II., and comprised in 5 vols. fol. 1700—1704. The political purpose of this work seems to have been to confute the leading doctrines of Dr. Brady, who maintained that all the liberties and privileges of the people of England were concessions from the kings, and derived from the crown; and that the representation of the commons, as now existing, was not introduced before the 49th of Henry III. These points are still controverted, and serve to distinguish two parties in the state. Mr. Tyrrell died in 1718, in his 76th year. Biog. Brit.

Tyrrel, in Geography, a maritime county of North Carolina. It contains about 3364 inhabitants.

Tyrrel's Bay, a bay on the south coast of St. Vincent; 2 miles E. of Kingstown.

Tyrrel's Pafs. See Terril's Pafs.

Tyrrhenia, in the same Geography, that part of Italy which is now called Tuscany, but more extensive towards the north and south-east. This country has changed both its name and its inhabitants.

The Umbrians were expelled by the Pelasgi, and these by the Lydians, under the conduct of Tyrhenus, the son of the king of Lydia, whence the name Tyrrhenia. As the Tyrrenians were a religious people, and offered many sacrifices, the Greeks called them Thusi, or Thufi, denoting sacrificers, from θυσις, to sacrifice. See Etruria and Tuscany.

Tyrrhenus Sinus, a gulf of Italy, on the coast of Etruria. According to Dionysius of Halicarnassus, this gulf was denominated "Artemus Sinus."

Tyreteus, in Biography, a Greek poet, is supposed to have been a native of Miletus, and to have refided at Athens, as a poet, musician, and school-master. Somewhat deformed in body, he polished a mainly and elevated soul. In a contest between the Lacone-monians and Melitenians, the former, having experienced some ill success, are said to have consulted the oracle of Delphi, B.C. 623, and to have been directed to seek a general at Athens. The Athenians, as some say in derision, sent Tyreteus, who, by therecital of poems in praise of valor and patriotism, animated the Spartans, so that they became victorious, and reduced the Melitenians to subjection. He is said to have also given them useful
useful advice as a military leader, in consequence of which the Spartans conferred upon him the right of citizenship, and honoured him whilst he resided among them. His war-poems have been celebrated by the ancients, and particularly by Horace, who joins him with Homer in his eulogy:

"—— Poet hos insignis Homerus
Tyrtænique mares animos in martia bella

Besides these poems, he composed, also, "Moral Precepts," and a work "On the Polity of the Lacedaemonians." Some fragments of his "War-Poems" are extant, which are published with the other minor Greek poets, and are said to be characterized by a masculine simplicity. Modern scholars have corrected the "Gen.

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TYRWHITT, Thomas, in Biography, a profound scholar and acute critic, was born in 1735, sent to Eton school in 1741, and entered at Queen's college, Oxford, in 1747. In 1755 he was elected fellow of Merton college, and in 1756 acted as under-secretary of war. In 1762 he became clerk to the house of commons, which post he retained till the year 1768. At this time he retired to pursue those studies which were adapted to his genius and taste, and to the acquirements he had already made in the knowledge of ancient and modern languages, and of the old as well as modern writers of his own country. He commenced his publications with compositions in poetry; such were "An Epitaph to Florio," and Latin versions of the "Melliah" and "Splendid Shilling," with an English one of "Pindar's eighth Itholian Ode." In 1766 appeared his "Observations and Conjectures on some Passages of Shakspere," which enabled him to communicate ingenious remarks to Mr. Stevens and Mr. Reed, for their editions of the works of this great dramatist. His "Proceedings and Debates in the House of Commons in 1620 and 1621, from an original MS. in Queen's College, Oxford," appeared in the same year; and in 1768 he published a corrected and enlarged edition of "Ellys's Manner of holding Parliaments in England." His first publication in critical literature was "Fragmenta duo Plutarchi," 1773, from one of the Harvard MSS. This was followed by a very valuable edition of Chaucer's "Canterbury Tales," in 4 vols. 8vo. 1773, which, besides corrections of the original text, contains an introduction and admirable essay on the author's language and verification. In 1776, he further displayed his Latin erudition and critical acumen, by a Latin dissertation on Babirus, one of the writers of the Euporean fables. In 1777 he gave a complete edition of the poems attributed to Rowley, with a preface and glossary. In a subsequent edition, which appeared in 1778, he expresses his full conviction, with the grounds of his opinion, that they were written solely by Chatterton, and he afterwards satisfied all unprejudiced judges with regard to this subject of literary controversy. (See Chatterton.) We shall merely enumerate his remaining works, which were, an edition of a Greek poem, Περὶ Αἴων (on Stones), ascribed to Orpheus, together with a supplement to his dissertation on Babirus, 1781; "Conjectura in Strabonem," 1783; and a newly discovered "Oration of Iesus agains Meneicles," 1785. Mr. Tyrwhitt was a member of the Royal and Antiquarian Societies, and a curator of the British Museum. He died, much lamented, in 1786, in his 56th year; having established a character that was truly estimable. He bequeathed to the British Museum all those of his books which were not before in that repository. Nichols's Lit. Anecd. Gen. Biog.

TYSCA, in Ancient Geography, a country of Africa, in which there were fifty towns. Maffiufa and the Carthaginians disputed the possession of this country, and the dispute was referred to the senate of Rome, according to Appian. TYSERRA, in Geography, a town of Hindooftan, in Bahar; 32 miles S. of Dofta.

TYSHAS, among the Ethiopians, the name of the fourth month of their year, commencing the 27th of November in the Julian year.

TYSNASOE, in Geography, a small island in the North sea, near the coast of Norway. N. lat. 60°.

TYSSSENS, Peter, in Biography, was born at Antwerp in 1625, and practised painting in portraiture and history with very great success. In the latter, however, he acquired the most substantial portion of his fame; and after the death of Rubens, he was made director of the Academy at Antwerp in 1661. His compositions are rich and ingenious, and are conducted in a style more correct and grand than that of most of his countrymen, and his colour is clear and harmonious. Amongst the best of his works are his "Martyrdom of St. Benedict," in the church of the Capuchins at Bruxels; the "Crucifixion," at the Carmelites; and the "Assumption of the Virgin," at the church of St. James at Antwerp. He died in 1692, aged 67, leaving two sons, painters.

TYSTED, in Geography, a town of Denmark, in North Jutland, situated on a river which runs into the Lymford gulf; 40 miles W. of Aalborg. N. lat. 57° 3'. E. long. 8° 45'.

TYTERSAAI, a round island of the Baltic, belonging to Russia: it is pretty high, but not above ten versts in circuit. It lies 18 versts to the S.E. of Hochland. As appendages, on the western side, or in the Sound, between it and Hochland, it has four small isles, quite low, but pretty far aunder: Kleinittert, the two Viri, and Vroutcalla, and on the southern side a flony ground, seven or eight versts in length, to the Narva passage; hence, it is hardly possible to land on this island. A third part of it is rock, another third is moras, and the remaining part an arid and fertile sand-hill. The island has no springs. The feal-fisherry is here considerable: the inhabitants live together in one village.

TYTH, or rather Tüth. See Tethe.

TYTHING, and Tüthing-man. See Tithing, Deeners, Tenementale, Hundred, Wapentake, &c.

TZAGANUSKIOI, in Geography, a town of Russia, in the government of Irkutsk, on the borders of China; 48 miles S.S.W. of Selengink.

TZAGONIA, a district in the south part of the Morea, between Misitra and Cape Malio.

TZAMAMENI, a town of Asiatic Turkey, in the government of Marafch; 40 miles S.E. of Marafch.

TZAMANDUS, in Ancient Geography, a town of Asia, in the vicinity of the Lesser Armenia.

TZANATLI, in Ornithology, the name of an American bird described by Nieremberg, which, he says, has all over very long and beautiful feathers, of a fine green, and of the shining globs of the feathers of the peacock. The upper side
side of the wings is black, but their under part is of a very fine and shaded green; it has a very beautiful crest on its head; its throat and breast are of fine scarlet; the wing-feathers are very long, and very beautifully variegated with several colours. The Indians esteem the feathers of this bird more valuable than gold; they dress up the images of their gods with them. Ray's Ornithol. p. 303.

TZANG, among the Ancients, a kind of Parthian garments, according to some; but others will have them to have been shoes set with precious stones, formed into the figure of eagles, and designed for the emperor's use.

TZANI, in Ancient Geography, a people of Asia, in the vicinity of Armenia. According to Procopius, they were formerly independent, and lived a savage life; worshipping birds and other animals, and inhabiting mountains covered with thick and dark forests. They paid no regard to agriculture, and had neither corn nor pastures, so that the culture of the soil was wholly neglected. They had no restraint on their liberty, till they lost it under Justinian, to whom they voluntarily surrendered themselves. In process of time they embraced Chriltianity, which produced a total change in their manners and habits. They afterwards served in the Roman armies. Justinian contributed, by the regulations which he introduced, to civilize them. But some authors say, that at this day the Tzanius have no kind of religion; that they have neither temples, nor altars, nor priests, nor any worship.

TZANPAU, in Ornithology, the name of an American bird described by Nieremberg, and famous for the modifications of its voice, and is by many esteemed the female of the [polyglossa arviv, or] conjugatoli of the Indians.

TZAVEVAR, in Geography, a town of Ruffia, in the government of Tobolik, on the Tobol; 28 miles S.E. of Okunevki. N. lat. 55° 20'. E. long. 64° 34'.

TZAVEVOKOKHAIISK, a town of Ruffia, in the government of Kazan; 68 miles N.W. of Kazan. N. lat. 54° 50'. E. long. 47° 54'.

TZAVEVOSANGURSK, a town of Ruffia, in the government of Viatka; 100 miles S.W. of Viatka. N. lat. 57° 8'. E. long. 47° 54'.

TZARI, a town of the principality of Georgia, in the province of Kack; 93 miles S.E. of Teflis.

TZARITZIN, a town of Ruffia, in the government of Saratov, on the Volga, defended by a ditch and rampart, with artillery and a considerable garrison; 180 miles S. of Saratov. N. lat. 48° 35'. E. long. 44° 34'.

TZEKINSKOI, a fortrist of Ruffia, in the government of Irkutsk, on the borders of China; 100 miles W.S.W. of Selenginsk.

TZEPETH. See Safad.

TZERIMISH, a horde of tartars, pretty numerous, in the neighbourhood of Kazan.

TZERNA, a river of Ruffia, which runs into the Mariza, near Tzernitz.

TZERNITZ, a town of European Turkey, in Romania, near the Tzerza; 32 miles N.E. of Adriano pole.

TZERVINKA. See Zervinka.

TZETZES, John, in Biography, a Greek poet and grammarian, flourished in the twelfth century, and was distinguished by his talents, natural and acquired, and particularly by a retentive memory, insomuch that he had the whole Scriptures by heart. He was the author of "Allegories on Homer," and of "Miscellaneous Histories," in thirteen chilaidas, written in that lax kind of verse which is called politieal, or popular. The characteristics of this poet, says one of his biographers, appear to be didoulnes and infi-
U.

The twentieth letter in the alphabet, and the fifth vowel.

Besides the vowel u, there is a consonant of the same denomination, wrote v or v.

V consonant and U vowel ought to be considered as two letters, but as they were long confounded while the two u’s were annexed to one form, the old custom still continues to be followed.

U, the vowel, has two sounds; one clear, expressed at other times by eu, as obtuse; the other close, and approaching to the Italian u, or English oo, as obtund.

V, the consonant, has a sound nearly approaching to those of b and f. With b it is by the Spaniards and Galicians always confounded, and in the Runic alphabet is expressed by the same character with f, distinguished only by a diacritical point. The sound found in English is uniform; it is never mute.

V is also a numeral letter, and signifies five; according to the verb,

“V vero quinque dabat tibi, fi recte numerabis.”

When a diphthong was added at top, V, it signified 5000.

V. R. among the Romans, flood for uti rogasi, as you desire, which was the mark of a vote, or suffrage for the palling of a law.

The following abbreviations sometimes occur: viz. V. A. for Veterani assignati; V. B. vero bono; V. B. A. viri boni arbitrati; V. B. F. vir bene fidei; V. C. vir consularis; V. C. C. F. vale, conjug. charifme, feliciter; V. D. F. voto dedicatur; V. G. verbi gratia; V. L. videlicet; V. N. quinto nonarum.

V, on the French coins, denotes those that were struck at Troyes.

V, in Music, besides its numerical import of five, in ancient madrigals implies quintus pars, a fifth part added to the treble, counter tenor, tenor, and base. In instrumental music it stands for violin, as V V do in the plural for violins. V. S. are the initials of vero subito, Lat.; and voli subito, Ital., for turn over quick.

VAAH, East, in Geography, an island in the North sea, 20 miles from the coast of Norway. N. lat. 68° 26’.

VAG, East, an island in the North sea, 30 miles from the coast of Norway. N. lat. 68° 12’.

VAASOE, a small island in the North sea, near the coast of Norway. N. lat. 56° 57’.

VAARSOE, a small island of Denmark, on the E. coast of Jutland, at the mouth of the gulf of Holmsen. N. lat. 55° 53’. E. long. 10° 1’.

VAAS, a town of France, in the department of the Sarte; 21 miles S. of Le Mans.

VAC.

VAAST, St. See St. Vanst.

VABAR, in Ancient Geography, a town of Africa, on the coast of Mauritania Cæfaris. Ptolemy.

VABAR, Aa-h-can-man-kar, a promontory of the eastern part of Mauritania Cæfaris. Ptolemy. The port Salis, mentioned by Strabo, lay S. E. of this promontory.

VABBAS, a town of Africa, in Mauritania Tingitana, formerly sometimes designated Julia Campellenis.

UABE, in Geography. See HILAIU.

VABELIRAKE, an island in the Red sea. N. lat. 25° 38’.

VABRES, a town of France, in the department of the Avignon, at the union of two small rivers, which soon after run into the Tarn. Before the revolution, it was the seat of a bishop, suffragan of Alby; 2 miles S. W. of St. Afrique.—also, a town of France, in the department of the Cantal; 4 miles E. of St. Flour.

VACAN, one of the small Philippine islands, near the N. coast of Samar. N. lat. 12° 47’. E. long. 121° 15’.

VACANCY, in Philosophy. See VACUUM.

VACANCY, in Law, &c. a post or benefice wanting a regular officer, or incumbent.

The canonists hold, that the kind of vacancy is to be expressed in the imprention of a benefice.

A future vacancy, or voidance of a spiritual living, some writers call vacaturo. Devolution is a species of canonical vacancy.

VACANCY of the Throne. See Right of Crown, and Revolution.

VACANT Effects, Pradia Vacata, or Vacca, are such as are abandoned for want of an heir, after the death or flight of the former owner.

In our law-books, vagantes terres, for vacantes, expresses forfaken or uncultivated lands.

A Romish benefice is said to be vacant in curia Romana, when the incumbent dies in Rome, or within twenty leagues of it; though it be only by accident that he was there. The pope nominates to all benefices vacant in curia Romana, excepting those of the neighbouring bishoprics.

VACANT Cylinder, in Gunney. See CYLINDER.

VACARIA, Aucaria, or Cucaria, in Ancient Geography, a place of Africa Propria, on the route from Hippone to Carthage, between Vicus Augusti and Tuburbo Minus, according to the Itinerary of Antonine.

VACARIA, in Geography, a town of Egypt; 8 miles N. E. of Habafesh.

VACARICA, a town of Portugal, in the province of Beira; 18 miles S. E. of Bragança.

VACAS, a river of Mexico, which rises in the province of Guatemala, and runs into the Pacific ocean, N. lat. 14° 22’. W. long. 92° 48’.
VACAS, a small island near the W. coast of Lewis. N. lat. 58° 11'. W. long. 6° 57'.

VACATAMA, a river of Peru, which runs into the Pacific ocean, S. lat. 9° 25'.

VACATING, in Law. See IMPEZZLE.

VACATION, Non-term, all the time included between the end of one term, and the beginning of the next succeeding one. See Terms.

This intermission was called by our ancestors pass Dei, and ecclesiæ; and sometimes, the time or days of the king's peace. Among the Romans, it was called jujticiam or ferie, or dies nefastus.

The time from the death of a bishop, or other spiritual person, till the bishopric, or other dignity, be supplied by another, is also called vacation.

During the vacation of a bishopric, the dean and chapter are guardians of the spiritualities, by the canon law; and of common right they are so at this day in England, and the archbishop hath this privilege only by prescription or composition, to whom with us, during the vacancy of any see within his province, all episcopal rights of the diocese belong; and all ecclesiastical jurisdiction is exercised by him and his commissiories. But when an arch-episcopal see is vacant, the dean and chapter of his diocese are guardians of the spiritualities, and exercise the spiritual jurisdiction of his province. And the perquisites that happen by the execution of such power belong to the guardian, but the newly-elected bishop may by law, after election and confirmation, execute the fame. See Custos Spiritualium.

The custody of the temporalities of every archbishopric and bishopric within the realm, in the time of vacation, belong to the king by his prerogative; and upon the filling of a void bishopric, the king, and not the new bishop, hath the temporalies of it from the time that the fame became void to the time that the new bishop shall receive them from the king; which the king ex gratia may grant him by his letters patent after his confirmation, and before his consecration: but after he is consecrated, invested, and installed, he may sue for his temporalies out of the king's hands by a writ directed to the executor; the metropolitan testifying the time of consecration. See Custos Temporalium.

During the vacation of a benefice, the profits, by the common law of the church, were to be laid out for the benefit of the church, or reserved for the successor; and by special privilege or custom the bishop or archdeacon might have the same, wholly or in part; and it is said, the king might take the profits of a free chapel, and the patron, those of a donative. But by statute 25 Hen. VIII. c. 11, it is enacted, that the tithes and profits of spiritual promotions, offices, benefices, and dignities, during the time of their vacation, shall belong to the person next preferent, promoted, instituted, inducted, or admitted, towards the payment of his first-fruits. Anciently, upon the death of an incumbent, the rural dean, without any formal fequestration, took the vacant benefice into his custody; but in process of time, the chancellor of bishops, or their archdeacons, laid claim to this jurisdiction, and by forms of fequestration aigned vacant churches to the acomini or lay guardians of the church: and now the ordinary way of managing the profits of vacation is by fequestration granted to the church-wardens, who are to manage all the profits and expenses of the benefice for the successor; whose right to the profits commences from the voidance of the benefice, and to whom the fequestrators are to account for such as they have received, deducting their reasonable expenses, and those of supplying the cure during the vacation. By 28 Hen. VIII. c. 11, an incumbent before his death may make his testament of all the profits of the corn growing upon glebe lands which he has maimed and fown: but if his successor is inducted before the fequestration of it from the ground, the successor shall have the title of it; otherwise, if the parcnon dies after the fequestration of it, and before it is carried off, the successor shall have no title. Where there is no proper lease of tithes, the person who receives them shall be accountable to the executor for such received by him, and which became due before the incumbent's death, and to the successor for tithes which he received, and which became due after the incumbent's death; but glebe lands, and tithes demised or leased, are comprehended under statute 11 Geo. II. c. 19, which enacts, that the executors or administrators of a tenant for life may, in an action upon the acafe, recover of the under tenant, if such tenant for life die on the day on which the rent was made payable, the whole, or if before such day, a proportion of such rent, according to the time such tenant for life lived, of the last year, or quarter of year, or other time in which the said rent was growing due. As to modes in lieu of tithes, which, if taken in kind, would have been due before the death of the incumbent, whereas the modus for the same is not due till after his death, it seems that the executors are not entitled to the said modus, nor any part thereof, but that the whole shall go to the successor.

Cicero, in his Orations, mentions a law, by which the priests were exempted from service in all wars, except only in upproars, and civil tumults; which exemptions he calls vacations.

VACCA, in Ancient Geography, a town of Spain, in the Pyrenean mountains, according to Isidore.

VACCA, Vacca, Bata, or Vagenje Oppidum, thus differently named by Sallut, Ptolemey, Plutarch, and Pliny, Bayjeh, a town of Africa, in Numidia, 10 leagues from Metternic Oppidum. According to Sallut, it belonged to Jugurtha, and he says, that when it revolted, he established it in Italics. Metellus was sent to reduce it.

VACCA, or Vacca, a river of Spain, in Lusitania, which pursuas its course from E. to W. passed to Talavera, and soon after ran into the sea.

VACCA, La, in Geography, a small island in the Mediterranean, near the S. coast of Sardinia; 3 miles S. of St. Antioco.

VACCA, in Zoology, the female of the ox-kind. See Cow.

VACCARIA, in Botany, so named from vacca, a cow, because, according to Ambrofines, cows are fond of the plant. His Vaccumia, like that of Dodoneus and Geraert, is the Linnaean Sophorai Vaccumia, referred by the writer of this to Gypsophila, see that article; with which genus its bell-shaped angular calyx, roundish capsule, and whole habit, accord so exactly, that we are at a loss to account for Linnaeus's having placed it elsewhere. The Vaccaria of Tabernamentus is very different, being our Tartritis glabra: an herb agreeing with the former in the glancious, smooth, entire leaves, of its stem at leaf, but otherwise having no character or property in common therewith, and certainly of too unfrequent occurrence, as well as too slender a habit, to afford much support for a dairy. The above Gypsophila belongs to a natural order of plants to which farmers have, as yet, scarcely recurred for any fort of fodder, the Campian tribe. Might not the name before us authorize an experiment at leaf, upon the qualities of this plant, as well as on those of its near relation Silene inflata? Spergula arvensis, one
VACCINATION.

one of this order, is reported to enrich the milk of cows, but has not come into any general notice. See Silent, sect. 2, and Spergula, n. 1.

VACCARY, VACCARIA, in our Old Writers, a house or place to keep cows in; a dairy-house, or cow-pasteur.

VACCEI, VACCÆANS, in Ancient Geography, a people of the interior of Hither Spain, S. of that part of the country which was inhabited by the Asturis. According to Diodorus, the Vacceans were the most genteel and polished of the Celtihrians. They were subjigated by L. Lucullus and Ch. Marcellus. It appears that they were a considerable people by the number of towns which Ptolemy assigns to them.

VACCINATION, or the Cow-pox inoculation, in Surgery, one of the greatest and most important discoveries of modern times. The discovery of the circulation of the blood, made by the celebrated Harvey, has unquestionably been the source of infinite improvement in every part of the healing art, and produced incalculable benefit; but vaccination, the discovery of another Englishman, the immortal Jenner, is a thing, which in its consequences certainly outdoes every previous innovation in practice, since it may be said to have annually the lives of millions.

Vaccination being the only known means of arresting altogether the fatal ravages of the small-pox, the most depopulating contagion upon the face of the earth, mankind will probably for ever feel a deep interest in the subject. In fact, nothing less than the well-stablished total extermination and permanent cessation of the small-pox, could ever justify a diminution of the laudable solicitude of the public for the continuance of vaccination. For it is not to be presumed, that a still milder and more effectual means of rendering the human body insusceptible of the effects of the small-pox contagion, will ever be discovered. A milder method, indeed, is hardly conceivable; since the symptoms produced by it amount only to a very slight indisposition, which never has any fatal or unpleasant consequences. Its efficacy also is now fully confirmed by abundance of evidence, collected from the united observations and experience of the best informed practitioners, who, it is obvious, can have no interest in the success of vaccination, but the general good of their fellow-creatures. Were medical men so bald as to suffer their judgment to be influenced by mercenary considerations, they would decry with all their force the practice of vaccination, which occasions too trifling an indisposition to put many fees into their pockets; and they would necessarily praise the small-pox inoculation, by which a frequently long and lucrative attendance on their patients might be calculated upon as a matter of certainty.

A general account of the origin of vaccination has been delivered in the article Cow-pox, and on this interesting part of the subject we shall therefore merely recapitulate a very few particulars. As, however, it is an object of the first-rate importance to be perfectly acquainted with every criterion of the genuine disease, we mean to introduce into this article some valuable instructions, which have been published by the late and best medical writers, or which have been circulated by the National Vaccine Establishment, respecting the appearances of the true affection, and of some others, which are either spurious, or not to be depended upon. In this account will be comprehended a brief explanation of the method of practicing vaccination. The rest of the article will be principally devoted to the consideration of the occasional failures to which the practice is liable.

It was an observation made long ago in several of the dairies in England, particularly in those in Gloucestershire, that the milk cows were frequently affected with an eruption upon their udders and teats, which was communicated not only from one cow to another, but frequently also to the hands of the milkers; and farther, that much of the milkers as had been thus affected, were never afterwards infected with the small-pox, either by inoculation, or by exposure to the most virulent contagion of that disease, even although such persons had not previously undergone that dreadful malady.

It is curious, that the knowledge of a fact so singular a nature, and one of so much importance to the general interests of society, should have been confined, from time immemorial, almost entirely to those occupied in the business of dairies, without being fully investigated by such persons as could duly appreciate its value.

Dr. Jenner, a physician at Berkley, in Gloucestershire, was the first person who set himself about examining this subject with that care and attention which its importance seemed to demand.

In the year 1798, after much diligent labour and investigation, Dr. Jenner published "An Inquiry into the Causes and Effects of the Variolæ Vaccinæ," and his observations soon excited the attention of the whole medical world. For a considerable time, the accuracy of the account was received among medical men with hesitancy. The character, however, of Dr. Jenner, and the singularity and important nature of the ailment, led to farther investigation; and although many arguments were urged, and circumstances fixed, which seemed adverse to the plan of the general introduction of cow-pox among mankind, yet the great utility of it was at last clearly evinced. Every statement made by the accurate Jenner was confirmed, and the credit of the cow-pox, as a preventive of small-pox, was established on a basis too firm to be shaken by the shafts of envy, malice, or ignorance—the basis of immutable truth.

Dr. Jenner, not satisfied with the afferptions of the dairy farmers and servants, that persons who had been affected with cow-pox were rendered thereby secure against the attacks of small-pox, determined to ascertain the truth of this fact by the test of experiment. He inoculated for small-pox many persons who had formerly undergone the cow-pox, some long as thirty and even fifty years previously; and these he uniformly found, as had been predicted to him, completely refisisted that disease.

So far the nature of cow-pox was known to others before it was known to Dr. Jenner. In the year 1798, however, this ingenious gentleman published his investigation farther; and on the 14th of May, he first intentionally infected the human constitution with the virus of cow-pox by inoculation, with the design, as he informs us, of observing more accurately the progress of the infection. The experiment succeeded; and the affection, though remarkably slight, was clearly marked in all its stages.

Dr. Jenner next conceived the idea of inoculating this person with the virus of small-pox, in order to ascertain whether its slight an affection as had taken place from the cow-pox, could possibly give security from that dreadful disease. Several flight punctures and incisions were accordingly made in both arms, and the virus of small-pox was carefully infected, but no disease followed. Some months afterwards, the same person was again inoculated for small-pox, but still no sensible effect was produced upon the constitution.

This is to be reckoned the first discovery of Dr. Jenner respecting the nature of cow-pox, viz. that the matter of cow-pox, taken from the vesicles on the cow, and intentionally infected into the human subject, produces an affection,
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The want of vaccine matter now prevented Dr. Jenner from prosecuting his experiments until the spring of the year 1798, when the cow-pox again became prevalent among the cows in the dairies in his neighbourhood, and afforded him an opportunity of investigating farther this interesting subject.

With matter taken from cow-pox vesicles on the teats of a cow, Dr. Jenner now inoculated several persons; and from these persons he propagated the affection to others, also by inoculation, even so far as the fifth change, without recurring to the original source, the vesicles on the teats of the cow. The experiments were completely successful. The affection, in all those inoculated, was regularly produced. All the persons who had been thus infected, were afterwards subjected to inoculation with the virus of the small-pox, but ineffectually, no disease in any instance succeeding to this operation. See Jenner’s Inquiry, p. 43.

From these experiments, we derive another most important fact concerning the nature of cow-pox, viz. that the virus of cow-pox may be propagated from one human subject to another, through several gradations, and still retains the power, not only of producing the affection, regular in all its stages, but also of rendering those constitutions which are infected, secure against the attacks of small-pox.

By unwearied attention to all the circumstances under which he was accustomed to observe this ailment, Dr. Jenner was led to conclude, that persons who have already had small-pox, are still susceptible of the action of cow-pox, though not to such a degree as those who have never been subjected to that of small-pox.

That in the cow-pox no eruption takes place, unless on the part where the virus is applied to the skin.

That the cow-pox, even under the most unfavourable circumstances, has never proved fatal.

That the cow-pox cannot be propagated by contagion, not only by actual contact, or inoculation with the virus.

That the virus of the cow-pox, inflected into the human body, may produce an affection which is merely local, the general constitution remaining unaltered; and that, in such cases, the person is liable to be infected with the small-pox.

Soon after Dr. Jenner’s publication appeared, viz. in November, 1798, Dr. George Pearson published “An Inquiry into the History of Cow-pox, principally with a View to Supercede and Extinuish the Small-pox.” In this treatise, the positions and conclusions of Dr. Jenner are examined with that candour and attention, which their importance demand. The evidences adduced are numerous and acceptable, and the result is highly favourable to the general introduction of inoculation for the cow-pox among mankind, not only as a preventive of small-pox, but also as a certain mode of ultimately extirpating that loathsome malady.

In May, 1799, were published “Reports concerning a series of Inoculations for Cow-pox, with Remarks and Observations on this Disease, considered as a Substitute for small-pox, by Dr. Woodville, Physician to the Small-pox and Inoculation Hospital in London.” The account here given by Dr. Woodville is very different from that given by Dr. Jenner, and by no means favourable to the general introduction of the new inoculation as a substitute for small-pox. Such a report, coming from a man of Dr. Woodville’s known character and reputation as an accurate observer, naturally produced a strong sensation in the minds of medical men concerning the discoveries of Dr. Jenner. The circumstances, however, under which Dr. Woodville’s observations were made; and upon which his reports were founded, were such as led him to be much deceived respecting the true nature of the cow-pox.

This report of Dr. Woodville, so very different from the general statement of Dr. Jenner, naturally called for a reply from the latter, who accordingly, in 1800, published “A Continuation of Facts and Observations relative to the Variola Vaccine.” In this publication, Dr. Jenner is anxious to recover his favourite subject from that degree of shade, which had been thrown upon it by the hasty reports of Dr. Woodville; and this he appears to have done with great success, both by further observations of his own, and by the concurring evidence of many respectable correspondents. See Bryce’s Practical Observations on the Inoculation of Cow-pox, chap. 1. edit. 2.

With regard to Dr. Woodville’s publication, we shall merely add in the present place, that the cases reported by him as examples of inoculated cow-pox, attended with many severe symptoms, and particularly with an eruption over the body, have been fully proved, and indeed have been since allowed by that respectable physician himself, to have been in fact cases of genuine small-pox, the infection having been contracted in the place where the patients were inoculated with cow-pox virus, before this latter affection had produced the effects and changes in the constitution, which render it a preventive of the other loathsome malady.

For additional particulars relative to the first progress of vaccination, we must refer to the article Cow-pox: suffice it here to say, that every objection to the practice was gradually removed; the public became convinced of its value and beneficial consequences; the great founder of it received an honourable remuneration from his country; both neighbouring and remote nations soon took a deep interest in the subject, and imitated our example; public establishments for the gratuitous inoculation of the poor were in a short time established in every civilized country; and the great benefits of the new plan were quickly extended to all the four quarters of the globe.

Description of the regular vaccine Vesicle.—When vaccination succeeds, a small red spot is observable on the third day, the day upon which the operation is being reckoned the first. If the spot be touched, an elevation is felt; and if examined with a magnifying glass, the little tumour appears to be surrounded by a very slight effu-rence.

The spot gradually enlarges; and between the third and sixth day, a circular vesicle appears. The edge of the vaccine vesicle is elevated; the centre depressed. The colour is at first of a light pink, sometimes of a blueish tint, and changes by degrees to a pearl colour. The centre is somewhat darker than the other parts.

The vesicle is hard to the touch.

In its internal structure it is cellular, the cells being filled with transparent lymph.

The vesicle commonly augments, till the tenth or eleventh day.

In the early stages, there is usually round the base an inflamed ring; or this takes place on the seventh or eighth day. About the ninth, it spreads rapidly; and near the tenth, it forms an areola of an inch and a half in diameter. This areola is of the usual colour of inflamed skin; it is hard, and accompanied with some degree of tumefaction.

It
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It continues out for a day or two, and then begins to fade, sometimes forming two or three concentric circles.

After the areola is formed, the vesicle begins to decline. The centre first turns brown, and the whole gradually changes into a hard smooth scab, of a very dark mahogany colour. This dry crust usually drops off about the end of the third week, leaving a permanent circular cicatrix, about five lines in diameter, and a little depressed; the surface being marked with very minute pits, or indentations, denoting the number of cells of which the vesicle had been composed.

Varieties in the Progress and Appearance of the Vaccine Vesicles, not preventing the Success of Vaccination.—The first appearance is seldom earlier, but often later, than has been described. In some rare instances, the vesicle commences even a fortnight or three weeks after vaccination; and if the progres is then regular, it is equally efficacious.

When the vesicle is ruptured at an early period, if the progres continue regular, successe is not prevented; nor is it when the crust of a regular vesicle is rubbed off in the decline of the disease, though ulceration should ensue.

Of irregular and imperfect Vesicles and Pustules, which are not to be depended upon.—In the deviations, there is usually a premature itching, irritation, inflammation, vefication, or supuration; or the progres of the vesicle is too rapid, its texture fott, its edge not well defined, its centre elevated, and the contents discoloured or purulent; or, instead of a proper areola, a veficular effuence of a fufky purple hue takes place, and the scab is of a light brown or amber colour.

The irregular vesicle or pufatile is more liable to be broken than the other, both from its more pointed form and fotté texture, and also from its being usually fo irritable as to provoke scratching. When broken, or even without this happening, ulceration often ensues.

A veficle, apparently regular at first, sometimes does not augment to the proper fize, but dies away without completing the regular progres. This usually leaves no cica-

When these, or any other conßiderable deviations from the regular course of the disease, take place, no dependence can be placed upon the operation, and vaccination should be repeated.

Probable Causes of irregular Vesicles and Pustules.—These accidents may be occasioned by matter or lymph being taken from an irregular vesicle or pufatile at any period, or from a regular veficle, at too late a period; or by lymph, though originally pure, which has been injured by long keeping, by heat, or otherwise. Or it may be caufed by performing the operation with a rufty or unclean lancet, or in a rude manner, or by destroying the veficle at an early stage, and thereby exciting too much inflammation, or interrupting the regular progres of the disease. Herpetic eruptions, and other cutaneous affections, have also been supposd to be the caufe of these irregularities; and occasionally to prevent the vaccine lymph having any effect.

As Dr. Bateman observes, there are two caufes for these imperfect inoculations: the one is the infection of effete or corrupted virus; and the other the presence of certain cutaneous eruptions, acute and chronic.

The lymph of the vaccine veſicle becomes altered in its qualities, soon after the appearance of the infalted areola; so that if it be taken for the purposes of inoculation after the twelfth day, it frequently fails to produce any effect whatever; and, in fome cafes, it suddenly excites a pufatile, or ulceration; in others, an irregular veficle; and, in others, erythemas. If taken when fcas are formed over the

vehicle, (as in the cafe of pufules of small-pox) the virus is occasionally fo putrefcent and acrid, that it excites the fame violent and fatal disease which arises from flight wounds, received in defuccing putrid bodies.

"Again, the lymph, although taken from a perfect vehicle, on the fith, feventh, or eighth day, may be fo injur'd, before its application, by heat, expoure to the air, moifure, ruft, and other caufes, as to be rendered incapable of exciting the true disease.

"The moft frequent caufe of these imperfections, however, seems to be the presence of chronic cutaneous eruptions, or the concurrence of eruptive fervers, or even of other febrile diseases. The chronic cutaneous eruptions, which sometimes impede the formation of the genuine vaccine vehicle, have been defcribed by Dr. Jenner under the ordinary indefinite term herpes and linea capitis. In the more accurate pharacoology of Dr. Willan, they are herpes, (includign the hingiles and vefecular ring-worm,) piorialis, and impetigo (the dry and humid tetter); the lichen, and moft frequently the varieties of porrigo, comprising the contagious eruptions denominated by authors cru$fus la$x$ea, arca, achores, and favo. Dr. Willan thinks that the itch and prurigo likewise have the fame influence.

"Of the interference of eruptive fervers, meafeles, scarlet fever, and chicken-pox, with the progres of the vaccine vehicle, when they occur foon after vaccination, numerous infances have been recorded. The fulferion of its progres, indeed, would be expected, under fuch circumstances, from the known facts respecting the reciprocal action of these contagious fervers on each other. But the action of the vaccine virus is not only fupended by these fervers, fo that the veficle is very flow in its progres, and the areola not formed till after the fourteenth day, or later, and sometimes not at all; but it is occasionally rendered altogether inefficient. Even typhous fever, and the influenza, have been obferved to produce a fimilar interruption in the progres of vaccination.

"Finally, the vehicle without an areola, takes place if the perfon inoculated have previously received the infection of small-pox, or if he be affected with some other contagious disease during the progres of vaccination.

"Other irregularities may probably have occurred. At all events, though the constitution is sometimes fully secured from the infection of small-pox, even by the irregular vehicles; yet as it is more commonly but imperfectly guarded by fuch vehicles, the propriety of Dr. Jenner's caution is obvious, that, when a deviation arises, of whatever kind it may be, common prudence points out the necefly of re-inoculation." See Bateman's Synopsis of Cutaneous Difeases, p. 219—221, edit. 3.

The Methods of taking Vaccine Lymph for Vaccination.—The lymph of a regular veficle is efficacious from the time it is secreted, till the areola begins to spread. It may, therefore, commonly be taken till the ninth day; but not after the areola is fully formed.

The lymph is to be taken by small superficial punctures made in the vehicle, with the point of a lancet introduced horizontally. Time should be allowed for the liquid to exude, which will form small pellicled drops. When requisite, a very light pressure may be cautiously applied with the flat surface of the lancet. Great delicacy is requisite in this operation; for if the vehicle is improperly treated, or too much opened, inflammation and ulceration may ensue.

Lymph intended to be used immediately, or in a few days, may be received on a lancet; but this is an improper instrument for preferring it longer; for the lymph soon rufts the lancet, and it is then liable to be injurious, or injurious. Quills and tooth-picks succeed; but small bits of
of ivory, shaped like the tooth of a comb, and properly pointed, are the most convenient instruments; and to render them more certain, they should be charged repeatedly.

In order to preserve lymph for a long period, the best method is by two bits of square glass. The lymph is to be received on the centre of one of them, by applying it to a punctured vessel. When fully charged and dry, it is to be covered with another bit of glass of the same size, and wrapped up in paper or in gold-beater's skin.

In whatever way the lymph is taken, it should be allowed to dry without heat, in the shade, and be kept in a dry and cool place. When inclosed in a letter, if great care is not taken, it may be injured by the heat of the melted wax in sealing the packet.

The Mode of Vaccinating.—Liquid lymph is better than dry, because it seldom fails, and the operation is more lightly and quickly performed. Therefore in every instance, where it is practicable, the patient from whom the lymph is to be taken should be present, and the lymph should be transferred immediately from him to the person who is to be inoculated.

Vaccination is generally performed in the arm, near the insertion of the deltoid muscle; but in order to hide the scar, and in adults who are likely to use the arm much, it may be advisable to vaccinate the outside of the leg, a little above or below the knee.

The lancet being charged, the skin should be stretched, and a small superficial puncture made with the point of the lancet, held nearly in a horizontal direction.

The lancet should be dipped in water and wiped after each operation, even when several successive inoculations are to be performed.

Dry lymph on glass may be moistened with a very little cold, or tepid water, on a point of a lancet, allowing it some time to dilute, and blending it by a little friction with the lancet. It must not be much diluted, but ought to have a thick consistence; it is to be infected in the same manner as the recent fluid.

When quills, ivory lancets, or tooth-picks charged with dry lymph are used, the lymph should not be diluted, but a puncture having been made with a common lancet, the point of the instrument is to be infected, and held in the puncture half a minute or more, that the lymph may gradually disolve and remain in the wound. If the part of the instrument which is charged be afterwards wiped repeatedly upon the edges of the puncture, it will tend still farther to enure success.

Vaccinated patients must be cautioned not to wear tight sleeves, nor to injure the vehicle by pressure, friction, or any other violence, lest inflammation or ulceration should ensue.

One perfect vaccine vehicle is sufficient; but for various reasons it may often be prudent to make two or three punctures, especially when the danger of receiving the small-pox is imminent, the lymph dry, or the patient's refidence distant.

Besides, greater security is obtained against a chance of failure from the derangement or destruction of one vehicle by accidental injury, or by the taking of matter for vaccination. When two punctures are to be made in one limb, they should be at least two inches asunder, on account of the irritation they may occasion. And one of them should be always permitted to go through its course undisturbed.

Lancets for vaccination should be kept clean and bright.

Constitutional Symptoms.—Constitutional symptoms sometimes occur at a very early period, but more commonly from the seventh to the eleventh day. These are drowsiness, restlessness, a chilliness succeeded by heat, thirst, head-ache, and other marks of febrile affection. Now and then sickness or vomiting takes places, especially in infants.

The constitutional symptoms are in general flight and transient, and such as require no remedy.

In a great proportion of cases, there is no perceptible indisposition; nevertheless, the person vaccinated is not the less secure from the future infection of the small-pox, provided the progress of the vehicle has been regular and complete.

Care should be taken not to confound the symptoms of other diseases with those produced by vaccine inoculation.

Medical Treatment.—In general, no medicine is required in this mild affection; but if the symptoms happen to run a little higher than usual, the same remedies are to be applied, as if they proceeded from any other cause.

No preparatory medicines are necessary before vaccinating, and commonly no cathartics need be given afterwards.

Should the local inflammation exceed the usual bounds, which rarely happens, unless from tight sleeves, pressure, or friction, it may be checked by the frequent application of compresses of linen dipped in water, in aqua lithargyri acetati composta, or in a solution of one drachm of cerussa acetata in a pint of water. These are to be applied cold.

If the scar be rubbed off prematurely, and ulceration take place, cooling and astringent applications may be used; such as a drop of aqua lithargyri acetati, which should be allowed to dry on the part, and then be covered with compresses dipped in water, or in either of the preparations of lead above-mentioned, and frequently renewed.

When the ulceration is deep or extensive, a poultice either of bread and milk, or of bread with any of the preparations of lead, may be applied, as the case seems to require. They must never be applied till they are nearly or quite cold.

In such foul and obdurate forse as resist the foregoing applications, the unguintum hydrargyri nitriti, mixed with an equal quantity of unguintum cere, or other similar applications, may sometimes be resorted to with advantage. And at other times, these forse may be healed with the unguintum cerussae acetata, or the mildew applications.

The irregular vehicle and pustules are frequently followed by ulceration at an early period, and this ulceration is to be treated in the same manner, as if it proceeded from the regular vehicle.

When the patient has been previously exposed to the infection of small-pox, this disease will be either superceded or not, according to the time which may have elapsed before vaccination.

Observations on the occasional Inefficacy of Vaccination.—When the vaccine vehicle poses the above-described characters, and passes through the regular gradations, whether accompanied with any perceptible disorder of the constitution or not, it effectually and permanently secures the individual from the danger, and almost universally from the contagion of the small-pox.

It is now nearly twenty years since the first promulgation of Dr. Jenner's discovery; and yet the truth of the preceding observation remains unimpeached. As a well-informed physician has remarked, the very exceptions to this statement may be said, without a folecium, to corroborate it. For, in the very small number of cases, (such as that of the son of earl Grosvenor), where an extensive eruption of small-pox has occurred subsequently to vaccination, the controlling influence of the cow-pox has been invariably and strikingly manifested, by the sudden interruption of the small-pox in the midst of its course, and the rapid convalescence of the patient. See Bateman's Synoposis, p. 216.
With very few exceptions, indeed, persons who have undergone both the local and constitutional affection of cow-pox, are thereby rendered unfusceptible of small-pox. It is not meant to assert, however, as has been too generally imagined, that every person who has been inoculated for the cow-pox, is rendered secure against the contagion of small-pox. As Mr. Bryce has ably explained, there are many circumstances, besides the mere inoculation, absolutely necessary to be ascertained, before this security can be guaranteed.

Again, says Mr. Bryce, it is well known, that a person having undergone the small-pox is not absolutely secure from a future attack of the same malady, as well authenticated instances are recorded, where the same person has undergone this disease a second time, and these attacks were neither of them local, but very certainly general constitutional affections. See the case of Mr. R. Langford, recorded in the fourth volume of the Memoirs of the Medical Society of London. This gentleman was infected with the small-pox at a very early period of life, and was much marked from the severity of the disease. Many years afterwards, he was again infected with the small-pox, which was of the confluent kind, and proved fatal on the twenty-first day from the attack. See also Dr. Woodville’s History of Inoculation, p. 217; Mr. Ring’s Anfwer to Dr. Mofeley, where many such cases are recorded; and the cafe of Lord Wortormeath’s child, published in the Medical and Physical Journal, vol. xiv. p. 256.

Now, as Mr. Bryce remarks, with regard to the cow-pox, it may also happen, that a person who has undergone that affection, may yet be afterwards affected with small-pox; but, as is well known in the former, in relation to small-pox, so also in the latter relative to cow-pox, the instances of the second attack from small-pox, or of the failure of the cow-pox to prevent the small-pox, are so very rare, as by no means to affect the general established rule; that persons who have once undergone the small-pox, or the cow-pox, as a constitutional affection, may thenceforth be reckoned secure against all future attacks of various contingencies. (See Bryce’s Practical Observations on the Inoculation of Cow-pox.) Besides the examples of the recurrence of small-pox a second time in the same individual, to be found in the publications already specified, additional instances are recorded by Dr. Jenner himself, Mr. Bryce, and in the Reports of the National Vaccine Establishment.

We shall here present the reader with the history of two remarkable cases published by this last institution; the one illustrating the occurrence of small-pox a second time in the same person, the other exemplifying the equally uncommon circumstance of an individual who had perfectly undergone vaccination, being afterwards affected with the small-pox.

Dr. Bree was called to visit Miss Sarah Booth, of Covent Garden theatre, on Monday, June 25th, 1811. She was said to be ill with the small-pox, and the following circumstances were reported by the mother and sisters.

Miss Booth was then eighteen years of age. She had been inoculated for the small-pox at five years of age, and had been affected with the usual degree of fever. The arm had been violently inflamed, and an eruption of small-pox pustules had appeared round the inoculated part, from which matter had been taken by Mr. Kennedy, the surgeon who attended her. Mr. Kennedy expressed himself satisfied that Miss Booth had passed regularly through the disease.

The usual fear of small-pox inoculation was perfectly evident on the arm.

On Thursday, June 20th, 1811, Miss Booth was seized with fever, distinguished by vomiting, violent headache, and pains in the back and loins. The symptoms continued till Saturday, June 22d, in the evening of which day, some pustules came out on the forehead and scalp.

Sunday, June 23d, a more complete eruption appeared on the face and neck, and the was relieved from the violence of the fever. The vomiting however continued, the throat became very sore, and a salivation began.

Monday, June 24th, the eruption extended itself on the body, the fever was still more abated, but the salivation, foreheads of the throat, and vomiting, were urgent symptoms.

Tuesday, June 25th, the fourth day of the eruption, the salivation and retching continued, with foreheads of the throat.

Wednesday, June 26th, fifth day of the eruption, pustules were noticed on the lower extremities, those on the face advanced, the eyes were swollen; and the number of pustules on the head and face was about two dozen.

Thursday, June 27th, sixth day of the eruption, the pustules on the face began to turn. She still suffered from sore throat and salivation.

Friday, June 28th, the pustules on the face turned, those on the lower extremities were few in number but well filled, and not yet changed.

Saturday, June 29th, eighth day of the eruption, the only complained of sickness. After this day, the pustules turned and dried on the lower extremities, and no complaint remained.

Dr. Bree considered this as a mild case of distinct small-pox.

On Sunday, May 26th, 1811, the Hon. Robert Grosvenor, who was recovering from the hooping-cough, became much indisposed and threw up his dinner. Fever followed, and he complained most particularly of excruciating pain in his back. He dwelt on this symptom until Thursday, when he became delirious, and there were observed on his face about twenty spots.

He had been vaccinated by Dr. Jenner, in his infancy, about ten years ago, and the mark left in his arm indicated a perfect disease.

On Friday morning, the eruption had not increased materially in point of number, but the appearance of the spots and the previous symptoms, suggested strongly a suspicion that the disorder was the small-pox.

Sir H. Halford had occasion to go to Windsor in the afternoon of Friday, and did not see Mr. Robert Grosvenor until the Monday following, (June 2d,) but he learned from Sir W. Farquhar, who attended him most carefully during Sir Henry’s absence, and subsequltly, that the eruption had increased prodigiously in the course of Friday; that on the evening of that day, Mr. Robert Grosvenor began to make bloody water, and that he continued to do so until Monday morning.

On the tenth day of the disease, the pustules began to dry upon the face, which was swollen to a considerable degree, but not to the extent of closing his eyes, and was attended by a salivation which lasted several days. Petechiae had occurred in the interstices of several of the spots, particularly on the limbs, and there was that particular smell from the whole frame which is remarkable in bad cases of confluent small-pox.

It was obvious that the first symptoms of which Mr. Grosvenor complained, were such as indicated a violent disease about to follow, and Sir Henry confesses that he entertained a most unfavourable opinion of the issue of such a malady, when it was fully formed; having never seen an instance
influence of recovery under so heavy an eruption attended by such circumstances. It seemed, however, that the latter stages of the disease were passed through more rapidly in this case than usual, and it may be a question whether this extraordinary circumstance, as well as the ultimate recovery of Mr. Grovenor, were not influenced by previous vaccination.

The Board of the National Vaccine Establishment are of opinion, that the case of the Hon. Robert Grovenor was a case of confluent small-pox: that the attack and progress of the disorder were attended by symptoms which almost invariably announced a fatal termination. But they observe, that the swelling of the face, which is generally so excessive as to close the eyes, and is considered as a favourable symptom, was slighter than usual; that on the tenth day the pustules began to dry upon the face, and that from that time the disease passed with unusual rapidity through the period when life is generally esteemed to be in the greatest hazard.

Those who are acquainted with the nature of the confluent small-pox, are aware that this peculiarity cannot be attributed to the effect of medical treatment.

In most cases of small-pox which have succeeded to vaccination, the pustules have been observed to dry more rapidly, and the disorder has concluded at an earlier period than usual.

If allowance be made for the relative periods in which the confluent and distinct small-pox complete their course, the rapid progress towards recovery through the latter stage of confluent small-pox, as exhibited in the case of Mr. Grovenor, may be compared with the rapid defecation of the pustules in the distinct and peculiarly mild form of the disorder which is considered as small-pox modified by vaccination. Both forms of the disorder proceed in the usual course, the one attended with violent, the other with mild symptoms, till they arrive near to the height, when they appear to receive a check, and the recovery is unusually rapid.

From this correspondence of circumstances, the Board are induced to infer, that in the case of Mr. Grovenor, which has been more violent than any yet submitted to them, the progress of the disease, through its latter stage, and the subsequent abatement of symptoms, were influenced by an anti-variolar effect produced upon the constitution by the vaccine procès.

The occurrence of small-pox after vaccination, has been foreseen and pointed out in the report on vaccination made to parliament, by the College of Physicians, in the year 1807, to which the Board are dièrous of calling the attention of the public; in which it is stated, that,

"The security derived from vaccination against the small-pox, if not absolutely perfect, is as nearly so as can perhaps be expected from any human discovery; for amongst several hundred thousand cases, with the refults of which the College have been made acquainted, the number of alleged failures has been surprizingly small; so much so, as to form certainly no reasonable objection to the general adoption of vaccination; for it appears that there are not nearly so many failures in a given number of vaccinated persons, as there are deaths in an equal number of persons inoculated for the small-pox. Nothing can more clearly demonstrate the superiority of vaccination over the inoculation of the small-pox than this consideration; and it is a most important fact, which has been confirmed in the course of this enquiry, that in almost every case in which the small-pox has succeeded vaccination, whether by inoculation, or by casual infection, the disease has varied much from its ordinary course; it has neither been the same in violence, nor in the duration of its symptoms; but has, with very few exceptions, been remarkably mild, as if the small-pox had been deprived, by the previous disease, of its usual malignity." Report of the College of Physicians, p. 23.

The peculiarities of certain constitutions with regard to eruptive fevers, form a curious subject of medical history. Some individuals have been more than once affected with scarlet fever and measles; others have been through life exposed to the contagion of these diseases without effect; many have refisted the inoculation and contagion of small-pox for several years, and have afterwards become susceptible of the disorder, and some have been twice affected with small-pox.

Among such infinite varieties of temperament, it will not appear extraordinary, that vaccination, though so generally successful, should sometimes fail of rendering the human constitution unrefistible of small-pox; especially since it has been found that in several instances small-pox has occurred to individuals over whom the small-pox inoculation had appeared to have produced its full influence. Three instances of this kind have taken place within the last month, and, in another instance, the natural small-pox has occurred a second time. See Report of the National Vaccine Establishment, July 1811.

It has been imagined by some, that although the human constitution is apparently shielded from the action of small-pox by having undergone the cow-pox, yet that this security may not be permanent; but that, at the end of a certain period of time, the person will again become susceptible of small-pox. This objection, however, must now have little weight; for Dr. Jenner himself inoculated with the virus of small-pox, persons who had been affected with the cow-pox twenty-five, twenty-seven, thirty-one, and fifty-three years before; but who had never been infected with the small-pox, and thence he found completely refistless this disease.

For further evidence and reasoning on this point, see Fer- mor's Reflections on the Cow-pox; Edin. Rev. No. XVII.; and Bryce's Practical Obs. on the Cow-pox.

Experience has proved that, in certain instances, the cow-pox virus has merely a local action, and such cases have been mistaken for the regular constitutional affection; a thing very likely to happen, when it is remembered that the general ailment of the system is seldom marked by any very strong symptoms; and that, in the cases alluded to, the local appearances would pursue a regular progress. Yet, in these circumstances, the patient is left unproteeted from an attack of small-pox. As Mr. Bryce has pointed out, therefore, a certain test of the constitution being really affected in every inoculation of cow-pox must be a most important deriteratum. Indeed, until there be demonstrated and generally known some unequivocal mark of a constitutional affection, which does constantly occur during the course of cow-pox when efectual, and which may be as easily distinguished as the fever and eruption consequent to the inoculation for small-pox, this new inoculation ought never to be performed, except by persons well acquainted with every appearance of the ailment. For, as much as it is more difficult to distinguish between the cow-pox and some other affections, and also more readily to ascertain the presence of a constitutional affection, than to form a similar judgment in the inoculated small-pox, the more does the cow-pox inoculation require attention to every symptom which may occur during its progress, in order that mankind may reap every advantage which has been promised from the general adoption of cow-pox as a preventive of small-pox.

Mr. Bryce has endeavoured to discover a criterion of the

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patient being constitutionally affected with the cow-pox, and the following observations upon this important subject merit particular attention. "I recollected (says he) some experiments which had been made with regard to the inoculation of small-pox. It was found, that if the same person was inoculated every day, until the fever induced by the first inoculation supervened, all the other punctures quickly advanced in their progress; and that, in the course of a day from the time the fever or general affection began, even that puncture which had been last made, perhaps only twenty-four hours before, equalled in maturity the one first made, perhaps eight or nine days before, and from which the fever had arisen.

"In this case it appears to me evident, and I think it must be admitted by every person, that even had no other pustules appeared on the body but those occasioned by the repeated inoculations; nay, had there even been no fever observed in consequence of the inoculation; yet as the pustule occasioned by the last puncture had been suddenly accelerated in its progress to maturation, at the time the general or constitutional affection should have appeared; this alone was a sufficient proof of the presence of the various action in the system.

"Judging again from analogy, I expected that the same thing, which thus happened in the small-pox inoculation, might also take place in that for the cow-pox; and the unexpected appearance of one or two vesicles upon children that I had inoculated, which vesicles were quite characteristic of the ailment, and the appearance of which I could only account for from a second and accidental inoculation during the course of the disease, strengthened my hope. And, certainly, if we find in cow-pox, where the inflamed and hard areola does not take place, at least in the regular course of that affection, until the end of the seventh, or beginning of the eighth day from inoculation, that a second inoculation, performed, for example, at the end of the fifth, or beginning of the sixth day, is so much accelerated in its progress, about the time the general affection of the system usually takes place, as to have an areola formed within a few hours, or very shortly after the first, and that this areola increases with the first, and again fades at nearly the same time, we must be struck with the similarity, and be forcibly led to draw the same conclusions in this case as in the former, respecting the small-pox, viz. that although the inoculated affection had appeared very quickly, and no fever had been observed, yet that a certain action had been excited in the constitution. That this was the true constitutional affection of cow-pox, may be judged by the acceleration of the second vesicle to a state of maturity five days before this could have happened, had there been no confen-aneous general action, or change in the system."

Mr. Bryce next details a series of experiments, which tend to prove, that if, during the regular progress of cow-pox, a second inoculation be performed a certain number of days after the first, the affection produced by this second inoculation will be accelerated in its progress so as to arrive at maturity, and again fade at nearly the same time as the affection arising from the first inoculation; and that this will take place, although the constitutional affection be so slight as otherwise to pass unnoticed.

From several examples related by Mr. Bryce, and a great many other cases, in which the second inoculation was performed at different periods of the primary affection, it is concluded, that the most proper time for performing the second inoculation, is about the end of the fifth, or beginning of the sixth day, from the first inoculation; reckoning each day to consist of twenty-four hours. Thus, if the first inoculation be performed on Wednesday at noon, the second inoculation should be performed on Monday, at the same hour, at which time the fifth day is considered to be finished, and the sixth day to begin. If the second inoculation be delayed beyond the sixth day, the affection produced by it will be very indistinct, and of short duration; and if performed at an earlier period than the fifth day, the contrast between the progress of the two affections, with regard to duration, will not be so great as may be thought necessary.

"These observations, however, (says Mr. Bryce,) are applicable to those cases only, in which the first inoculation advances by a perfectly regular course, and in which the areola begins to form about the end of the seventh, or beginning of the eighth day; for in those cases, in which the first inoculation is from certain causes accelerated or retarded one or two days, as frequently happens, then the second inoculation should be performed at a more early or late period accordingly.

"In short, my observations on this point lead me to conclude, that in order to obtain the proposed criterion in the greatest perfection, the second inoculation should be performed between thirty-six and forty-eight hours before the areola of the first inoculation begins to appear. This is necessary in order that the secondary affection may have proceeded some length, and that a small vesicle, containing virus, may have been formed by it, before the constitutional action from the first inoculation begins, otherwise no areola, but merely a slight degree of hardening will take place from the second puncture.

"As, on the one hand, the acceleration of the second inoculation in the manner above-mentioned, is to be regarded as a certain mark of a constitutional affection in cow-pox, so, on the other, if it shall be found that no such acceleration takes place, but that the second inoculation proceeds by a slow progress through all the stages, and has the duration of a primary affection, it is to be concluded that no constitutional action has taken place from the first infection of the virus; and when this is the case, the second inoculation must be regarded as a primary affection, and a third puncture be made according to the plan laid down for conducting the second inoculation; and thus we may go on until the proper test be obtained, or until we be satisfied that the constitution completely refits the action of cow-pox." See Bryce's Practical Observations on the Inoculation of Cow-pox, edit. 2.

Many other particulars relating to the subject of vaccination will be found in another place (see Cow-pox), and we shall therefore merely add, that the new practice is on every account deserving of the confidence and encouragement of the public. The cow-pox is greatly milder than the small-pox, even under the most approved mode of treatment; being never attended with danger, seldom with sickeffs, and never producing pustules generally over the body, nor indeed any disfigurement of the skin, except at the part where the virus has been directly infected by the inoculator. The small-pox is one of the most contagious diseases to which the human race is subject; and, when propagated in this way, it is one of the most fatal. On the other hand, the cow-pox is not at all contagious, and can only be communicated by the application of the vaccine virus to the part affected, as happens in the accidental inoculation of the hands of milkers, and the ordinary practice of vaccination.

Many hundreds of thousands have now been vaccinated in these kingdoms, and yet there is not on record a single unequivocal instance of the cow-pox having proved fatal. Corresponding agreeable accounts are also received from every part of the civilized world. The weight which this consideration ought to have may be well conceived, when it
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The genus before us, mostly confined to Europe and North America, is peculiarly abundant in the latter country. It is very remarkable that, as no Erica occurs in America, so no Vaccinium has been found at the Cape of Good Hope. These genera, similar in many of their flowers, differ no lefs widely in the situation of their germens, and texture of their fruits, than in the inflorescence and habit of their foliage, which in Vaccinium is scattered, dilated, generally membranous and deciduous; always indeed simple and undivided; but totally unlike the narrow, whorled, evergreen leaves of Erica. The flowers in Vaccinium are copious, stalked, either solitary, simply racemose, or tufted, drooping, nodorous, generally very elegant, tinted with various shades of red or pink, with a few, scarlet yellowish. Berries black, blue, blue-black or red, generally edible, though not pleasant, nor always wholesome, in a rude state. Stem thorny, bulky, of humble stature. Stirpular none.

The species of Vaccinium were ill understood by Linnaeus, but we hope to trace the origin of many of his errors, which have never been cleared up, and have led all following authors astray. Murray defines but fifteen species in the fourteenth edition of Syll. Veg.; Willdenow has twenty-seven, of which five are American, three natives of Japan, one of Otago, one of Otago, and one of the North American. Pursh has twenty-five species of Vaccinium, besides three of Oxyoccus, from North America only. In reviewing the whole of the genus, we find something to add, though we have many specimens that are dubious. We are obliged to follow the distribution of Linnaeus, by which the evergreen species are separated from those which are deciduous, though some uncertainty must always attend that character, respecting species known from dried specimens only.

See. 1. Leaves deciduous.

1. V. Myrtillus. Common Bilberry, or Bleaberry. Linn. Sp. Pl. 498. Willd. n. 1. Fl. Brit. n. 1. Eng. Bot. t. 465. Fl. Dan. t. 974. (Vaccinia nigra; Ger. Em. 1415. Myrtillus; Matth. Valgr. v. 1. 210. Camer. Epit. 135.)—Stalks solitary, single-flowered. Leaves deciduous, furred, ovate, smooth. Stem acutely angular. Calyx scarcely divided.—Native of heaths, floy mosses, and mountainous woods, throughout most parts of Europe, especially the more northern, flowering in May. Dr. Sibthorpe gathered it also on the Bithynian Olympus. The root is woody. Stem from six to eight inches to two feet high, erect, bushy, smooth; the young green branches leafy, in a little zigzag, furnished with very acute dilated angles. Leaves about an inch long, on short footstalks, pubescent, veiny, rather acute, copiously furred; paler beneath. Flowers pendulous, simple, naked, smooth, small, axillary stalks. Calyx dilated, angular, seldom so much lobed as in Eng. Bot. Corolla globosus, generally five-cleft, of a very delicate wax, pink hue. Anther horned. Germen glaucous. Berry the size of a currant, blue-black, acid, eaten in tarts, or with cream, in the north and west of England. In the eastern counties this plant is not plentiful. Its fruit is sometimes sent into Norfolk from Devonshire. Mr. Menzies brought, from the west coast of North America, what we can scarcely make more than a gigantic variety of this species, seven or eight feet high, larger in every part, with less distinctly furred leaves.

2. V. ovalifolium. Oval-leaved Bilberry. Stalks solitary, single-flowered. Leaves deciduous, oblong, obtuse, pointlets, entire, smooth, strongly veined beneath. Stem angular. Calyx scarcely divided.—Brought by Mr. Menzies from the west coast of North America. A four, ten or twelve feet high, whose smooth branches are less acutely angular than in the foregoing, and whose leaves are very effensively different, being
being either perfectly elliptical, or slightly ovate, blunt, and quite entire, about an inch and a half long, copiously terminated with fine veins, quite smooth on both sides; rather paler beneath. Flowers solitary at the base of each tuft of budding leaves, drooping, each accompanied, at the base of its stalk, by a large ovate, acute, coloured bracteae. The flowers seem to agree with those of *V. Myrtillus* in size, colour, and structure, except that the corolla is more oval at the ovate. The berries are black, crowned with the cup-shaped, slightly four-lobed, calyx.

3. *V. parvifolium*. Small-leaved Red Bilberry.—Stalks solitary, single-flowered. Leaves deciduous, elliptical, obtuse, pointed, entire, smooth; glaucous, and slightly veiny, beneath. Stem acutely angular. Calyx scarcely divided. Stalk of the fruit club-shaped.—Gathered by Mr. Menzies on the west coast of North America. The thrubby stem is eight or ten feet high, with smooth zigzag branches, whose angles are as much dilated and prominent as in our first species. The leaves most agree with those of *ovatifolium* in shape, but are at their full growth scarcely a quarter so large, and each tipped with a small point; their under side rather glaucous, with less copious, and far less prominent, veiny reticulations. We have seen no flowers. The berries are red, and make excellent tarts. They appear to be smaller than the last, crowned with a similar calyx, but their stalk is shorter, meafuring scarcely half an inch, more drooping, and very remarkably swelling upward, so as to be quite club-shaped, contracted at the summit, of which the foregoing sheets but slight traces. There is no doubt of these two species being very distinct from each other, as well as from all hitherto described by authors.

4. *V. pallidum*. Pale Whortle-berry. Ait. n. 2. Pursh n. 6.—"Clusters bracted. Corolla cylindrical-club-shaped. Leaves ovate, acute, finely serrated, deciduous."—Native of North America, from whence it is said to have been sent to Kew garden in 1772, by Dr. Samuel Martin. Mr. Pursh never met with this species, nor was he able to ascertain it, even by a strict examination of the Bankian herbarium. Neither are we furnished with a specimen, nor with any information concerning this plant, which, on account of its inferiority, seems here misplaced.

5. *V. hirtum*. Hairy Japan Whortle-berry. Thunb. Jap. 155. Wildl. n. 3.—Stalks solitary, single-flowered. Leaves deciduous, ovate, serrated, hairy all over as well as the young branches.—Gathered on hills between Misco and Jedo in Japan, by profcssor Thunberg, one of whose specimens is before us. A taller shrub than our *Myrtillus*, flowering in April. The bracteae are round. Leaves like that species in size and shape, but covered with soft hairs; their under side rather pale. Flowers drooping, on very short stalks.

6. *V. uliginosum*. Great Bilberry. Linn. Sp. Pl. 499. Wildl. n. 5. Fl. Brit. n. 2. Engl. Bot. t. 581. Fl. Dan. t. 231. Pursh n. 15. (Vitis idea magna quibusdum, five Myrtillus grandi; Bauh. Hist. v. 1. 578. Rau. Syn. 457. V.idea folis subrotundis major; Ger. Enc. 1416.)—Stalks somewhat aggregate, single-flowered. Leaves deciduous, obvate, entire, smooth. Branches round.—Native of marily mountainous heaths, and alpine bogs, in Sweden, Germany, Switzerland, Savoy, Scotland, and the north of England; as well as in the more northern parts of America, and on its west coast; flowering in April or May, and ripening the berries, which are cattable, but not either very grateful or wholesome, in August. Talller than the Common Bilberry, and of a more glaucous hue. Leaves smooth and even above; veiny and glaucous at the back; quite entire, by which this species is readily distinguised from all that in other respects bear any resemblance to it. Flowers drooping, flesh-coloured, mostly four-cleft, with eight long-horned filaments. Calyx short and blunt. Berry large, juicy, black, with a glaucous hue. Seeds finely thrated. A variety with slightly pointed leaves, was published by an apothecary at Berne, in 1787, as *V. mucronatum*, an an imaginary species, of which we shall speak at the end of our eighth.

7. *V. calycinum*. Large-capped Whortle-berry.—Stalks solitary, single-flowered. Leaves deciduous, ovate, serrated, smooth, with downy ribs. Branches angular. Segments of the calyx deep, ovate.—Gathered by Mr. Menzies, in woods, upon lofty mountains, in the Sandwich islands. This appears to be of a much taller stature than the preceding. The leaves at the flowering feauon are an inch and a quarter long, near an inch wide, plant, with fine, copious, pointed, incurred ferratures, and a small, blunt, terminal point; their under side pale. Flowers about the lower part of each young leafy branch, axillary, drooping, each on a simple, naked, slightly downy stalk, an inch long. Calyx in five, rather unequal, deep, ovate, entire, blunting, smooth, finely reticulated segments, exceeding the germen in length. Corolla oblong, with five angles, enclosing the andthers and style. Of the fruit we have no knowledge.

8. *V. flaminifum*. Green-wooded Whortle-berry. Linn. Sp. Pl. 498. Wildl. n. 4. Ait, n. 3. Pursh n. 1. Andr. Repof. t. 263. (V. album; Pursh n. 2, excluding the synonym of Wildenow. Arbutus americana baccifera, foliolis comisis, &c.; Pluk. Mant. 22. Phys. t. 339 f. 3.)—Clusters downy, with oval bracteae as long as the flowers. Anthers twice as long as the spreading bell-shaped corolla. Leaves elliptical, acute, entire; glaucous and rather downy beneath.—Common in dry woods, from New England to Florida, flowering in May and June. The trunk is firm, about two feet high, with numerous green branches, downy when young. Leaves an inch and a half or two inches long at the flowering season, on very short downy stalks. Flowers copious, white, with remarkably conspicuous, tawny, linear anthers, spurred near the base. Corolla broader than long. Berries greenish, or white, called Deer-berries. Analogy leads us to consider the inoffiscence of this species as racemose. Indeed the bracteae, though resembling the leaves in every respect but size, are usuallly but one-fourth as large, and sometimes not a quartor of an inch in length. Mr. Pursh's album can scarcely, by his definition or Andrews's figure, be marked even as a variety, though he says the flowers are larger, and berries more globose, than in the common *flaminifum*. That his plant is not the Linnaean album, appears from the original specimen, sent by Kalm to Linnaeus, under the denomination of "a Vaccinium with white berries," but which proves *Xylopleum cilatum Ait.* Pursh 161. No wonder that no subsequent investigator could ever ascertain *V. album*! We must notice another error of Linnaeus, to prevent mistake. He cites under *V. flaminifum* the proper figure of Pluenet, but with a wrong synonym or definition. Here also it falls to our lot to correct our great master respecting another of Kalm's plants, *V. mucronatum*, which has ever remained as unintelligible as the album. His described specimen is certainly one of the *Mespilus* or *Pyrus* tribe; but, not in a condition for us precitely to ascertain the species, nor can we refer it to any thing in Mr. Pursh's work.

9. *V. arboresum*. Shining-leaved Tree Whortle-berry. Marsh. in Michaux Boreal.-Amur. v. 1. 238. Pursh n. 3. (V. dilatatum; Ait. n. 5. Wildl. n. 8.)—Stalks axillary and solitary, or terminal and racemose, naked. Leaves ovate, acute, with flight glandular ferratures; pubescent above;
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above; rather downy beneath. Corolla bell-shaped, acute.
Stamens the length of its tube.—In dry woods, on the rocky
banks of rivers, from North Carolina to Florida.
flowering in May and June. A large flower, sometimes
twenty feet high, very elegant. Flowers white, tinged
with red. Berries globular, black, almost dry. Pursh.
Our numerous wild as well as cultivated specimens,
compared with the Bankian herbarium, and answering to
every particular of the published accounts of this plant, leave
no doubt of its identity, and therefore we do not scruple to
adopt Michaux's name, in preference to the older one, dif-
fusum, the latter being founded in some mistake. The
branches are round, downy when young. Leaves peculiarly
shining, and strongly reticulated with veins. Flower-flatts
an inch long, angular, marked with two or three glands;
some of them axillary, solitary, from several of the lower
leaves of each branch; others forming a nearly leafless clayer,
at the end of the same branch. In one instance we find two
such clusters, with a small leafy bracteae, or two in the middle,
terminating a short lateral branch whose leaves are fallen.
This proves that Nature has drawn no precise line of
decimation between the racemose and the solitary inflorescence
of this genus, which in many species, by the ambiguous
nature of their floral leaves, run into each other.

10. V. augufifolium. Narrow-leaved Whortle-berry, or
Bluits. Ait. n. 6. Wildl. n. 9. (V. myrtillodes;
Michaux Borel.-Amer. v. 1. 234. Pursh n. 16.)
Stalks scattered, morellofty, single-flowered, naked.
Leaves lanceolate, nearly entire; downy at the ribs and
margin.—In America, about Hudson's Bay and Labrador,
flowering in April and May. Berries large, blueish-black,
known by the name of Bluits. Pursh. Michaux says this
species has the habit of V. Myrtillus; its leaves being mem-
branous, of a narrow lanceolate form. We have been no
specimen. Dr. Solander's original name, in Hort. Kew.
and Willdenow, appears preferable to that of Michaux
adopted by Pursh.

(V. frondosum; Michaux Borel.-Amer. v. 1. 230. V.
hirtellum; Ait. n. 12, according to Pursh, from a com-
parison with the Bankian herbarium.)—Clusters downy,
with oval bracteae; partial flatts with two lanceolate ones.
Leaves obovate, pointed, entire, downy and virid.
Germ hairy. Corolla bell-shaped, obtuse, longer than the
flamas.—In dry sandy woods, particularly pine forests,
from New Jersey to Florida, flowering in June and July.
A low bufty flower, with round branches. Leaves an inch
and a half long, varying in breadth, reticulated with veins;
paler beneath, but not all glaucous; covered all over,
epecially when young, with short vivid pubescence, and
angular dots, as are also the branches, flatts, and bracteae.
The latter are as long as the flowers, and leafy, like those
of V. flamineum, n. 8; but each partial flower-flatt bears
also, about its middle, two smaller, lanceolate, sometimes
coloured, partial bracteae. The germ is particularly
shaggy. Segments of the calyx deep, ovate, fringed, col-
loured. Corolla white, tinged with pink, rather large.
Berries black, globular. A comparison of the two figures
above cited will shew the ambiguous nature of the infor-
ence, and account for this species having been described
twice in the accurate publication of Mr. Aiton.

Michaux Borel.-Amer. v. 1. 234. Pursh n. 17.—Flowers
lateral, solitary, nearly sessile. Leaves somewhat wedge-
shaped, rounded, obtuse, serrated, membranous, very
smooth.—In the more northern regions of America, parti-
cularly about Hudson's Bay. A little flower, with many
crowded flamas, from two to four inches high, very smooth
in every part. Corolla of a short pitcher-shape. Berry
nearly sessile, globose, glaucous-black. Michaux.

amenum; Ait. n. 13. Wildl. n. 18. Pursh n. 9. Andr.
Repos. t. 138. V. difomorphum; Michaux Borel.-Amer.
v. 1. 231.)

Andr. Repof. t. 181.

7. V. fucatum; Ait. n. 8. Wildl. n. 13. Pursh n. 11.
(V. formosum; Andr. Repos. t. 97.)

Flowering branches nearly leafless. Clusters corymbose,
dropping. Bracteae membranous, shorter than the downy
flower-flatts. Leaves elliptical, acute, minutely serrated,
smooth, with downy ribs.—Native of swamps and wet
woods, from Canada to Carolina and Georgia, flowering in
May and June. A tall flower, sometimes seven or eight
feet high, with numerous roughish round branches; some-
what angular and downy when young. Leaves for the most
part following the flowers, an inch and a half or two
inches long, elliptic-oblong, acute at each end, various in
breadth, veiny, but not liltingly reticulated; very
minute, more or less evidently, serrated; tipped with a
glandular point; smooth, except the rib and veins, which
are finely hairy or downy, especially at an early period.
Flower-flatts short and broad, downy. Clusters from branches
of the preceding year, seldom accompanied with leaves,
alternate, about an inch long, and rather compact, often
corymbose, or fix or eight drooping flowers, whose partial
flatts are finely downy, with short curved hairs, and fur-
nished at the base with membranous, reddilh, smooth,
fringed, deciduous bracteae, varying in length and acutenes,
but more much shorter than their corresponding flatts.
Segments of the calyx broad and hollow. Corolla white or
reddilh, cylindrical, somewhat angular, contracted at the
mouth, with five shallow, spreading, marginal segments.
Stamens ten, downy. Anters within the corolla, having a
double pouch at the base, but no spurs. Style sometimes,
but not always, a little prominent. Berries black, inipid.
Some apology may seem necessary for our thus uniting four
reputed species, a measure of which Michaux first, in part,
fittelg the propriety. With respect to the coromycum and
amenum, original specimens of each, and the total want
of any distinctive character in authors, will abundantly
justify us. The calyx spreads equally in both. Indeed the
former being always unknown, by name, in our gardens,
and its specific character in Linnaeus being insufficient, if
not incorrect, that species could be ascertained by his
herbarium only, which in this instance was neglected, and
under the name of amenum, acquired in England. It had
here once been called elevatum, as appears by a specimen
given to the younger Linnaeus. Some gardeners subse-
cquently transferred to flamineum the name of amenum,
and hence perhaps when the latter appeared after from America,
it received the new appellations of virgatum and fucatum,
perpetuated likewise in Hort. Kew., between the original
specific characters of which there can be little discovered
that is essential. In Mr. Andrews's plate of virgatum in-
cdeed the clayers are accompanied by leaves, of which we
have seen no example in coromycum, and the flowers are
smaller than usual in this latter; but Mr. Pursh, under the
name of amenum, allows that it " has a number of varieties
in size, shape, and colour." The elegant fucatum, as
figured by Mr. Andrews, evidently betrays a close affinity
to
to corymbosum, colour being avowedly of no importance, and the erect calyx we have good reason to mistrust. Having formed our opinion from the best materials in our power, we leave its refutation or confirmation to those who may have opportunities of future inquiry, without any intentional disrespect to the great authorities from which we differ.

14. V. bracteatum. Bracteate Japan Whortle-berry. Thunb. Jap. 156. Wild. n. 11. — Clusters axillary, longer than the smooth, acute, ferrated leaves. Bracteas lanceolate, ferrated; partial flasks with two smaller awl-shaped ones. — Gathered by Thunberg in the island of Niphon, Japan, flowering in June. The branches are always smooth, leafy, slightly angular when young. Leaves eliptic-lanceolate, acute at each end, an inch and a half long, on short flasks, sharply but not deeply ferrated, very smooth on both sides; paler, and more reticulated, beneath. We should suspect them to be evergreen, as they accompany the flowers, on what seem to be last year's shoots; but having no particular information, we, like Willdenow, place this species among those to which it appears to be naturally related. Clusters two or three inches long, axillary, solitary, simple, slender, many-flowered, very smooth. Partial flasks short, drooping, turned all one way, each having at its base a lanceolate, acute, smooth bractea, mostly twice its own length, and about the middle two others of a very small size. Segments of the calyx short, acute, spreading. Corolla cylindrical, white. Nothing is known of the fruit. The Japanese call this plant Ki Fu. Thunb. Jap. 156. Wild. n. 12. — Clusters axillary, longer than the ovate, brilily, nearly entire leaves. Bracteas lanceolate, smooth.— Native of Japan, where it is called Saizoku. The stem is smooth, ash-coloured, with upright villous branches. Leaves ovate, acute, unequal, from one to two inches long, ribbed; the ribs bifid all over. Flowers red, turned one way, in terminal, solitary, ferrated clusters, as long as the finger. Bracteas about one-third of an inch in length. Calyx very short. Thunberg. We formerly examined this species in professor Van Royen's herbarium, but are not possessed of a specimen. It must be presumed that by "folia integra" is not meant undivided leaves, the true sense of that expression; because no Vaccinium has any other. The learned author evidently contrasts this phrase with the folia ferrata of the preceding species, and means that the leaves are nearly entire; in contradistinction to integrerrima.

15. V. cilium. Hairy-ribbed Japan Whortle-berry. Wild. n. 7. — Clusters axillary, longer than the ovate, brilily, nearly entire leaves. Bracteas lanceolate, smooth. — Native of Japan, where it is called Sajoku. The stems are smooth, ash-coloured, with upright villous branches. Leaves ovate, acute, unequal, from one to two inches long, ribbed; the ribs bifid all over. Calyx red, turned one way, in terminal, solitary, ferrated clusters, as long as the finger. Bracteas about one-third of an inch in length. Calyx very short. Thunberg. We formerly examined this species in professor Van Royen's herbarium, but are not possessed of a specimen. It must be presumed that by "folia integra" is not meant undivided leaves, the true sense of that expression; because no Vaccinium has any other. The learned author evidently contrasts this phrase with the folia ferrata of the preceding species, and means that the leaves are nearly entire; in contradistinction to integrerrima.

16. V. gallicum. Larger Gale-leaved Whortle-berry. (V. glandens; Michaux Borel.-Amer. v. 1. 232. Pursh n. 12.) — "Flowers on very short flasks, in small tufts. Leaves serrate, lanceolate-wedge-shaped, slightly serrated, downy. Calyx pointed. Corolla ovate, much contracted at the mouth. Style prominent." — Found in the sandy woods and swamps of Virginia and Carolina, flowering in May and June. Flowers small, yellowish-white. Berries small, glabrous, black. Pursh. Michaux describes this shrub as having the aspect of Myrica Gale, with slightly downy branches. Leaves veiny. The flower-flasks, shorter than the flowers, burst from a bud, composed of numerous crowded scales, but become naked and corymbose as the fruit advances. We trust that we need not labour under the necessity of precisely retaining the original specific name. V. tenuilimum of Hort. Kew., cited doubtfully by Michaux, is not known to us; but Mr. Pursh describes it as distinct from the present species; see n. 20.

17. V. frondosum. Blunt-leaved Whortle-berry or Blue Tangles. Linnae Sp. Pl. 499. Wild. n. 14. Ait. n. 9. Pursh n. 5. Andr. Repof. t. 140. (V. glaucum; Michaux Borel.-Amer. v. 1. 231.)" β. V. venusifum; Ait. n. 10. Wild. n. 15. Herb. Banks. Pursh. — Clusters lax. Bracteas oblongate, not half so long as the slender partial flower-flasks, which bear two smaller linear ones. Leaves oblong-oblong, pointets, entire, smooth. — In open woods, on a sandy loam, from New Jersey to Carolina, flowering in May and June. About three feet high. Flowers small, almost globular, white. Berries large, blue, globular, eatable, called by the country people Blue Tangles. Pursh. The branches are round, smooth, and slender. Leaves from two to three inches long, thin and plant, generally obtuse, but in the variety β acute; bright green above; glaucous beneath, sprinkled with minute resinous dots, and reticulated with copious veins. Clusters lateral, from the last year's wood, about the length of the leaves, loose, slender, and spreading. Partial flowers-flasks about an inch long, with a small obviate, pointed, entire bractea, covered with resinous dots, at the base, and two, much smaller and narrower, deciduous ones about the middle. Flowers drooping, greenish-white, shaped like Lily of the Valley, but smaller. Segments of the calyx broad, deep, nearly triangular.

18. V. liggurianum. Privet-leaved Whortle-berry. Michaux Borel.-Amer. v. 1. 232. Pursh n. 13, excluding the synonym of Willdenow. "Flowers nearly sessile, in sessile tufts. Leaves nearly sessile, erect, lanceolate, pointed, finely ferrated, veiny, downy. Corolla longish-ovate. Branches angular. — In dry woods, from Pennsylvania to Virginia; common on the mountains, flowering in May and June. An upright straight stalk. Leaves membranous, furnished with conspicuous, often purplish, veins. Scales of the flower-buds also purplish. Tufts of flowers sometimes springing leaflets from the branches, sometimes axillary. Corolla purplish-red. Berries black. The leaves vary extremely in shape and size. Pursh, Michaux. We adopt this species, which we have never seen, from the authors quoted, under the name by which they have distinguished it. But the Linnaean V. liggurianum is a nonentity, or rather no Vaccinium, being the very same plant with Andromeda paniculata; Linnaeus having received it in flower, from Kalm, as a Vaccinium, and in fruit, as an Andromeda. The latter species, having flowers of another species annexed, could not but mislead him, though we must allow that he too implicitly trusted his pupil, in all the strange blunders, which we have had the mortification of recording and explaining, relative to this genus.

19. V. reflexum. Clammy Whortle-berry. Ait. n. 11. Wild. n. 17. Pursh n. 7. Curt. Mag. t. 1288. (V. parviflorum; Andr. Repof. t. 125. "Andromeda bacatta; Wangenh. Amer. t. 39. f. 69.") — Clusters leaflets, villous, downy, with lanceolate bracteas on the partial flasks. Leaves obvate-lanceolate, blunfit, pointets, entire, covered with resinous dots. Calyx in five deep ovate segments, longer than the germen. — In woods and on mountains frequent, from Canada to Carolina, flowering in May and June. From two to four feet high. Berries black, eatable. Pursh. The branches are round; downy when young. Leaves usually an inch and half long, bright green on both sides, more or less obtuse, villous; veiny beneath. Clusters lateral, from last year's wood, drooping, lax, shorter than the leaves. Flowers small, either red or purple, or of a greenish-yellow. Calyx reddish or brown, remarkably large in proportion to the germen, not well expressed in either of our English figures.

22. *V. padifolium*. Madeira Whortle-berry. (V. Arctofothaphylos; Ait. n. 16. Curt. Mag. t. 974. Andr. Repof. t. 36. Pallas Rolf. v. 1. p. 45.)—Clusters lateral. Bracteas all at the base of the partial flalks. Leaves ovato-lanceolate, acute, finely ferrated, smooth on both sides, except the mid-rib. Stamens nearly as long as the bell-shaped corolla, with smooth, slightly ferrigated, filaments. Calyx five-lobed.—Native of the loftest parts of the island of Madeira, where it forms impenetrable thickets, flowering in July, according to Mr. Maffon, who lent a specimen to the younger Linnaeus in 1777. This so precisely agrees with Mr. Edwards’s figure in Curtis’s Magazine, drawn from a plant obtained from Mount Caucufus, by Mr. Lodidges, that we cannot doubt its being what Pallas found in the alpine beech forests of that neighbourhood. The younger Linnaeus obtained a specimen of the same, from the English gardens; and we received one in flower, from the present duke of Marlborough’s garden, at White Knight’s, in June 1806. So far therefore our cultivated plant is identified, nor can any thing be more distinctly, from the true *V. Arctofothaphylos*. The leaves, well compared by Pallas to those of the Bird-cherry, are of a more rigid texture, and not half so large as the former; they are more rounded at the base; their ferrurations, though small, more evident; under surface quite smooth, except at the very base about the mid-rib, which is also a little hairy on the upper side. *Footforks* longer. *Calyx* more decidedly five-lobed, though it appears to vary in the depth of its segments. *Corolla* larger, pale green, with a purple tinge; sometimes it seems to be all over purple externally. Partial or internal *bracteas* rather broader. *Germen* very glaucous. The *filaments* differ essentially, in being flat, quite smooth at each side, and only slightly ferrigated in the margin, especially about the top. We can discern no spurs on the *anthers*, which moreover are rather shorter with respect to the *corolla*. The *style* is sometimes a little prominent, but not conically. Pallas says the *berries* are black, juicy, eatable, gratefully acid. Sometimes, though very rarely, he found the flowers four-cleft.

23. *V. cymodoacamum*. Azorian Whortle-berry. —Clusters lateral. Bracteas ferrated, all at the base of the partial flalks. Leaves elliptic-lanceolate, acute, finely ferrated, quite smooth, except the base of the mid-rib. Stamens half the length of the cylindrical corolla, with hairy ferrurations. *Calyx* slightly five-lobed.—Native of mountains in the Azores, where this species is called *Uva de ferras*, or Mountain Berry. We believe our specimen to have been gathered by Mr. Maffon. The *fruit* appears to be arborescent. The *branches* are round, thick only of the present year leafy, and finely downy at the two opposite sides. *Leaves* like the last, but rather larger, more tapering at the base, and quite smooth, except a little shorter down at the bottom, about the mid-rib and *footfork*. *Clusters* numerous, on the leafless branches of the preceding season, under the leafy shoots of the present year, spreading the length of the leaves, with smooth, angular, red *filaments*; and deciduous *bracteas*, of which the inner ones are lanceolate and sharply toothed. *Flowers* drooping, nearly an inch long, apparently red or purple. *Calyx* with a dilated border, very finely and obtusely five-lobed. *Corolla* twice as long as the last, cylindrical, with five erect, short, marginal segments. *Stamens* but half the length of the corolla; their *filaments* mostly hairy all over; *anthers* shorter than the filaments, delitute of spurs. *Style* rather longer than the corolla. Of the *fruit* we have no account, nor do we know whether this species has ever found its way into the English gardens.

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**VACCINUM.**

Lamarck Dict. v. r. 74. —Michaux Boreale-Amerr. v. t. 232.—Flowers in dense fessile tufts. Leaves nearly fessile, ovato-lanceolate, pointed, finely ferrated, smooth, except the rib and margin. Branches angular, with a downy line at each side. *Calyx* in five deep acute segments.—On dry hills on a grassy soil, from New England to Virginia, flowering in May. A low, very branching *flrub*. *Flowers* pale red. *Calyx* green. *Berries* large, blue-black, extremely sweet and agreeable to eat. The mountains of Pennsylvania produce an immense variety of this species, in size and shape of the fruit, leaves, and flowers. *Purpuf.* Specimens from the late Rev. Dr. Muhlenberg, which we cannot but refer to this, have green rather warty *branches*, distinguished by a fine downy line along each side. The *leaves* are an inch long, resembling those of some dwarf Willows, beautifully reticulated, sometimes purplish; most shining beneath; their ferrurations minute, glandular, downy, as well as the mid-rib. *Flowers* few, in tufts, from fealy axillary red *buds*, about the tops of the branches. *Calyx* very smooth.

21. *V. Arctofothaphylos*. Oriental Bear-berry, or Whortleberry. Linn. Sp. Pl. 500. Willd. n. 21. (Vitis indica orientalis maxima, ceratifi folio, flore variegato; Tournefort Cor. 42. Voyage v. 2. 98, with a figure.)—Clusters lateral. *Bracteas* all at the base of the partial flalks. Leaves elliptical, acute, minutely ferrated; hairy beneath. Stamens as long as the bell-shaped corolla, with very hairy filaments. *Calyx* slightly five-lobed.—Gathered on the coalt of the Black Sea, by Tournefort, two of whose specimens are before us. He describes this *flrub* as the height of a man, with a trunk as thick as one’s arm. The young leafy *branches* are downy on two opposite sides, like the foregoing, but more broadly. *Footforks* extremely short and broad, hairy. *Leaves* plant, broadly elliptical, tapering at each end, two inches and a half long, and nearly one and a half broad, bright green, sometimes reddish above, and quite smooth, except the midrib, on that side; paler beneath, and besprinkled with short prominent hairs, especially about the lower part of the rib; their margin furnished with copious, but blunt and shallow, ferratures. *Clusters* from the wood of the preceding year, below the fresh leafy shoots, drooping, one and a half or two inches long, somewhat hairy, composed of eight or ten pendulous *flowers*, of a dirty white, striped or stained with purple. *Bracteas* several at the base of each partial flower-flalk, fringed; one of them large, ovate, often half an inch, or more, in length; the rest linear-lanceolate, much smaller, one or two in number, scarcely more, being analogous to those found about the middle of the partial flalks, in several species already described, though differently situated in the present species and its allies. *Calyx* with five shallow, more or less evident, marginal segments, smooth. *Corolla* bell-shaped, five lines long and four wide, with five shallow, recurved, marginal segments. *Filaments* ten, nearly half as long as the corolla, round, gibbous, extremely hairy at the back. *Anthers* longer than the filaments; yellow, smooth, and tubular above, furnished with two granulated pouches, defending much below their insertion, at the inner side of the filament, and with two small dorcal spurs, at the base of the tubes above those pouches. *Style* shorter than the corolla. The *berries* were seen by Tournefort in an unripe flat only. He judges this plant, with great probability, to be the *eugenia* or Bear-grape of Galen.

What the variety β of Linnaeus may be, we know not, as nothing anfwerable to his reference is to be found in Tournefort’s *Corallarium*.
VACCINIUM.

24. V. meridionale. Jamaica Whortle-berry. Swartz Ind. Occ. 676. Willd. n. 22. Ait. n. 17.—Clusters erect, downy. Bracteas solitary, ovate. Leaves ovate, crenate, permanent, smooth. Stem arborescent. Native of the lofty Blue mountains in the southern part of Jamaica, flowering in February, and ripening fruit in August. This is from ten to thirty feet high, with a very straight smooth trunk, and hard wood. Branches straight, spreading, leafy, round; downy when young. Leaves rigid, an inch or rather more in length, on short, broad, downy stalks, flat, and somewhat shining, veiny; paler beneath. Clusters solitary near the end of last year's branches, twice as long as the leaves; their partial stalks naked, except a large, solitary, ovate, smooth, coloured, deciduous bractea, at the base of each, and equal to it in length. Flowers drooping, reddish-white. Calyx in four broad, acute, permanent segments. Corolla ovate, quadrangular before expansion, contracted at the mouth, with four acute, recurved, marginal segments. Stamens eight, as long as the corolla, their filaments hairy in the middle. Dr. Swartz mistakes the tubular points of the anthers for horns or spurs. Style the length of the corolla. Berry roundish, juicy, pleasantly flavoured, pale red, resembling that of V. Vitis idea. The flowers are very rarely five-cleft and deciduous.

25. V. cereum. Otaheite Whortle-berry. Forst. Prodr. 28. Willd. n. 25. (Andromeda cerea; Linn. Suppl. 238.)—Stalks axillary, solitary, single-flowered, with two lanceolate bracteas about the middle. Leaves roundish-ovate, serrated, smooth, permanent. Calyx in five broad pointed segments.—Gathered by Forster in Otaheite. The branches are round, smooth, leafy; slightly downy when young. Leaves about an inch long, pointed, coriaceous, veiny, twice the length of the smooth simple flower-stalks. Corolla ovate-oblong, with five angles, and five erect small segments. Anthers, according to Linnæus, with two dorsal horns.

26. V. Vitis idea. Red Whortle-berry, or Cow-berry. Linn. Sp. Pl. 500. Willd. n. 24. Fl. Brit. n. 3. Engl. Bot. t. 598. Pursh n. 18. Fl. Dan. t. 40. (Vaccinium rubra; Ger. Em. 1415; Vitis idea rubra; Camer. Epit. 136.)—Clusters terminal, drooping; with ovate concave bracteas, longer than the flower-stalks. Leaves obovate, revolute, minutely toothed; dotted beneath. Corolla bell-shaped. Native of dry barren rocky woods and heaths, in the north of Europe, plentiful in Scotland, Wiltshire, Devonshire, Wales, &c. Flowering in June, and ripening fruit in August. Mr. Pursh says it occurs on rocks near the sea-coast, from Canada to New England, but the American plant is more robust than the European, with considerably larger leaves. The roots are creeping, woody. Stems ascending, in England about a span high, wavy, but little branched, smooth, leafy; young branches round, downy. Leaves evergreen, somewhat like box, but darker on the upper side, smooth and shining. Flowers pale pink, four-cleft, in elegant, dense, solitary, pendulous clusters. Calyx in four deep, broad, ovate, red segments. Anthers without horns. Stigma small, slightly notched. Berries blood-red, acid, astringent and bitter, lasts palatable in tumors than either the Cranberry or Bilberry, but excellent in a roeb or jelly, for colds and chronic diseases, as well as to eat with roast meat, to which latter purpose this jelly is universally applied by the Swedes.


28. V. crafisfolium. Thick-leaved Whortle-berry. Andr. Repof. t. 157. Ait. n. 19. Pursh n. 20. Curt. Mag. t. 1132.—Clusters lateral and terminal, corymbose. Bracteas shorter than the flower-stalks. Leaves elliptical, crenate, smooth; paler and veiny beneath. Corolla bell-shaped. Stem diffuse.—Brought by Mr. Frazer from Carolina, in 1787. It flowers in May and June. A trailing evergreen species, requiring some shelter from our variable winters and springs. The leaves are not an inch long; their upper surface very smooth and even, with a little minute pubescence on the midrib and flower-stalk. Flowers five-cleft, prettily variegated with pink and white, drooping, on red corymbose flanks. Stamens hairy. We have no account of the fruit.

29. V. villosum. Hairy Mexican Whortle-berry. Clusters longer than the leaves. Flower-stalks, calyx, corolla and lanceolate bracteas densely hairy. Leaves elliptical, entire, revolute, coriaceous, with a blunt point; hairy on the upper side.—Sent by M utilis to Linneus from Mexico. The branches are round, leafy, densely hairy when young. Leaves crowded, an inch long, on thick downy flower-stalks; their upper side convex; under paler, veiny, scarcely hairy, except the rib. Clusters towards the ends of the younger branches, axillary, dense, drooping, nearly twice as long as the leaves, very hairy all over, the niger particularly. Bracteas coloured, internally smooth; those of the partial stalks very narrow. Calyx in five deep, lanceolate, densely fringed segments. Corolla purplish, oblong, with five hairy angles, and as many small recurved teeth. Fruit unknown, but the habit, and the inferior niger, sufficiently announce the genus.

30. V. reticulatum. Reticulated South-sea Whortleberry. Stalks axillary, solitary, single-flowered, downy. Leaves ovate, more or less serrated, coriaceous, with a blunt point; strongly reticulated on both sides and nearly smooth. Germin hairy.—Gathered by Mr. Menzies, in woods on high mountains, in the Sandwich islands. The branches are leafy; when young angular and finely downy. Leaves an inch long; remarkable for their reticulated veins, prominent on both sides; their margins somewhat revolute, strongly serrated, but sometimes nearly entire. Flower-stalks numerous, erect, about an inch long, swelling upwards, without bracteas; reflexed as the fruit advances. Calyx in four or five deep, oblong, ribbed, downy, coloured segments, at length involute. Corolla cylindrical, thrice as long as the calyx, purple, slightly hairy, with four or five upright blunt teeth. Style hairy, shorter than the corolla. Berry globular, depreised, nearly or quite smooth.

31. V. dentatum. Toothed South-sea Whortle-berry. Stalks axillary, solitary, single-flowered, smooth. Leaves ovate, with sharp tooth-like serrations, coriaceous, veiny, very smooth. Calyx longer than the smooth germin. Found by Mr. Menzies, in woods on the lofty mountains of the Sandwich islands. The branches of this are angular, always smooth, like every other part. Leaves rather longer than the last, more strongly and uniformly toothed, with less prominent veins. Flower-stalks naked and smooth; recurved when in fruit. Calyx in five deep, oblong, obtuse, smooth, keeled segments, longer than the germin, even after the corolla is fallen, which latter is wanting in our specimens.

VACCINIUM.

37. V. Oxycoccus. Common Cranberry. Linn. Sp. Pl. 500. Willd. n. 25. Fl. Brit. n. 4. Engl. Bot. t. 319. Fl. Dan. t. 80. Lamarck f. 3. (Vaccinium palustris; Ger. Em. 1419. Lob. C. v. 2. 109. Oxyccoccus; Cord. Hift. 142. f. 1. Oxyccoccus vulgaris; "Perf. Syn. v. 1. 419." Purf. 263.)—Corolla deeply four-cleft. Leaves ovate, entire, revolute, acute, smooth. Stems creeping, thread-shaped. Flowers terminal.—Native of turfy molly bogs in the mountainous parts of Europe; common in Switzerland, Ruffia, Scotland, Ireland, and the north of England, as well as in Lincolnhire, and the neighbouring part of Norfolk, flowering in June. Mr. Purf. speaks of it as common on the boggy mountains of North America, from Canada to Pennsylvania, flowering from May to July. Few plants are more elegant. The wiry shrubby stems creep among bog-mofs, with long, branching, fibrous roots, which often appear to imbibe nourishment from the clear water alone. Branches scattered, procumbent, smooth, reddish, leafy. Leaves evergreen, flalked, from a quarter to half an inch long, coriaceous; convex and of a dark shining green above; glaucous beneath. Flowef-flalks few together about the tops of the branches, somewhat corymbose, above an inch long, fimple, red, flightly hoary, bearing two minute bracteae in the lower part, and a solitary, drooping, very beautiful, four-cleft flower at the top. The gemin is smooth. Calyx-lobea broad and fallow. Corolla pink, with reflexed oblong segments, a quarter of an inch in length. Filaments purple, downy. Anthers yellow, converging, without spurs. Berry pear-shaped or globular, often spotted, crimson, of a peculiar flavour, somewhat like black currants, with a strong acidity, grateful to most people, in the form of tarts, for which purpose they are largely imported from Ruffia. We can remember Cranberries from Lincolnhire, and the north-west corner of Norfolk, being sold in cart-loads about the streets of Norwich; but the extensive enclosures have, in many parts, deftroyed and drained their native bogs. Light-foot records that at Longtown, on the borders of Cumberland, not less than twenty or thirty pounds-worth were sold each market-day, for five or six weeks together, and dispersed over different parts of the kingdom. In Sweden these berries serve only to boil silver plate to its due degree of whiteness, their sharp acid corroding the superficial particles of the copper alloy.

38. V. macrocarpus. American Cranberry. Ait. Hort. Kew. ed. 1. v. 2. 13. t. 7. ed. 2. n. 22. Willd. n. 27. Lamarck f. 4. (V. Oxycoccus; Michaux Boreal.-Amer. v. 1. 228. "V. hispidulum; Wangenh. Amer. 108. t. 30. f. 67." Oxyccoccus macrocarpus; Purf. 263.)—Corolla deeply four-cleft. Leaves elliptic-oblong, entire, flightly revolute, obtuse, smooth. Stems ascending. Flowers lateral.—In bogs principally in a sandy foil, and on high mountains, frequent, from Canada to Virginia, flowering from May to July. A larger and more upright plant than the last, with less convexp, more oblong, much larger leaves. Several flowers come forth at the ends of the last year's branches, surmounted by the flouths of the present year. Their bracteae are fntuated towards the top of each flalk, and, as well as the segments of the corolla, are larger than in the Common Cranberry. The filaments however are shorter in proportion to their anthers, which are uncurly long. The berries are larger, and of a brighter red, than the last, collected in great abundance, for making tarts, in America, and exported from thence to Europe; but they, always prove here far inferior in quality to the Ruffian Cranberies,
berries, however excellent in America. The best method of having American Cranberries in Europe, is by cultivation in an artificial bog with great plenty of water, as first contrived by Sir Joseph Banks. A very few square yards of ground thus employed, will yield as many Cranberries as any family can use. If allowed to hang till they are full ripe, as late as October, they are even better than the Oxycoccus, and may be kept dry in bottles throughout the year. Our wild Cranberries have generally been gathered too early; as may also be the case with those brought from America.


We have seen no specimen of this species. Its fruit might be an acquisition to our tables, if raised in the same mode as the last.

In the above ample detail of the genus Vaccinium, which we trust will prove acceptable to those who have ever attended to its former confusion, we have removed eight of Wildenow's species. Four of these are album, mucronatum, ligustirum and hirsutum of Linnaeus, the latter being referred by Mr. Pursh to Gaultheria by the name of perpilia; see that article, where this species should be introduced next to procumbens, with the following character.


The other four divided species of Wildenow are fasciatum, svenstum, amenum and virgatum of Dr. Solander, in Alt. Hort. Kew. ed. 1.; the reasons of which rejection are to be found under our 15th and 17th species.—On the other hand, we have augmented this genus with seven entirely nondescript species, for most of which we are obliged to the bounty of our often-mentioned friend Mr. Archibald Menzies; as well as with twelve others from Michaux, Pursh, and our several English garden botanists and publishers. On this subject we would particularly direct our fellow-labourers to the plants hitherto confounded under V. Arctophyllos, and the still-upaded varieties of that interesting species; relating to which, dicycories are probably yet to be made, in the wilds of Tartary and the Levant, and possibly even in the greenhouses of France and England.

VACCINIUM, in Gardening, comprehends many sorts of hardy, dwarf, under-shrubby, lignious, evergreen, and deciduous plants, among which the species most commonly cultivated are those of the black whortle, or bilberry (V. myrtillus); the white Pennsylvania whortle, or bilberry (V. album, see the preceding article); the red whortleberry (V. vitis idaea); the cranberry, moss, or moor berry (V. oxycoccus); the marsh whortle, or great bilberry-bush (V. uliginosum); the hispid-flaked American whortleberry (V. hispidulum, see the preceding article); the corymbous-flowering American whortleberry (V. corymbosum); the privet-leaved Pennsylvanian whortleberry (V. ligustrininum); and the flammeous American whortleberry (V. flammeum).

Theertia has flender, branching, shrubby stalks, about two feet in height, and produces large eatable berries of a blackish-red colour. The second is a similar plant, producing small berries of a whitish colour. The third is a more dwarfish plant, producing clusters of nodding, red berries, and red juicy berries of very great value for tarts, and other culinary uses. The fourth has flender creeping stalks, which produce reddish eatable berries of very great value and importance for different culinary well-known purposes, as in pies, tarts, &c. The fifth has a woody, shrubby, branching stalk of some height, and affords whitish purple flowers, and large berries. The sixth grows with flender, trailing, rough stalks, and yields large red berries. The rest are all American plants.

Method of Culture.—They may all be raised from seeds, or offset root-fuckers, creeping roots, and trailing rooting stalks. Those also growing with several rooted stalks and branches, may be divided in the root and top, into separate plants, in which way they succeed very well.

The seeds should be sown, where that method is purposed, in the autumn as soon as they are ripe and gathered, in a shady border, or the places where the plants are to grow and remain; and when the young plants are up, they should be kept clean, and be removed with earth about their roots, as there may be occasion.

The offsets and root-plants may be set out in the same season in proper places, which for the first four sorts are those where the soil is of a cold, light, sandy, heathy, mossy, moorly, or woody nature, and for the two succeeding ones in marshy and boggy situations; as these have the most resemblance to those in which they grow naturally, and are the most prosperous. It may likewise be advisably in many cases to take the plants from their native situations with balls of earth about their roots. Some, however, succeed in the common borders and other parts. They may in some cases be removed in the spring season, but the other is the better way.

They are admitted into gardens and pleasure-grounds for the sake of variety, curiosity, and ornament, and some of them are cultivated for the use of their fruit. In its natural situation, that of the cranberry is often an object of very great importance, affording the poor gatherers of its berries considerable employment as well as much money. It delights moss in rather wet, mossy, mossy situations.

The vaccinium oxycoccus of Linnaeus, or cranberry, may be preferred perfect for several years, merely by drying it a little in the sun, and then stopping it closely in dry bottles. The vaccinium myrtillus, or bilberry, yields a juice, which has been employed to flax paper, or linen, purple. In autumn the moor-game chiefly live upon the product of this shrub.

VAERII. See Druids.

VACH, in Geography, one of the smaller Lipari islands, in the Mediterranean.

VACH, or VACH, in Mythology, a name of the Hindoo god-faes Saraswati; fakti or comfort of the creative power in the Trimurti, or divine Triad of the East. The name Vach, or Vachi, is derived from speech, Saraswati being goddes of eloquence; and hence called also Vachdevi. Vachapati, a title equivalent to lord of eloquence, is sometimes applied
to the regiment of the planet Jupiter, whom the Hindoos call *Vr̥ṣapāti*; which see.

**VACHA**, in Geography, a town of Germany, in the principality of Upper Helfe, on the Werra; 20 miles N.E. of Fulda.—**Alto**, a town of Germany, in the margravate of Anpachch, on the Rednitz; 25 miles N.E. of Anpach.—**Allo**, a town of Peru, in the diocese of La Paz; 8 miles S.W. of La Paz.

**VACHE**, or *Cow's Island*, an island about twelve miles from the south coast of Hispaniola, about twenty-four miles in circumference. It was formerly a place of rendezvous for pirates and freebooters, and is provided with three ports, one of which can receive vessels of 300 tons. N. lat. 18° 51'.

**VACHE et le Torreau, or Cow and Bull Rocks**, rocks on the south coast of Newfoundland, a little to the east of Placentia bay.

**VACHELUSE**, one of the Lipari islands; 3 miles S. of Stromboli.

**VACHIER**, a town of France, in the department of the Upper Loire; 9 miles S. of Le Puy en Velay.

**VACHON, Pierre**, in Biography, an eminent performer on the violin, was born in Provence, 1730. After performing at the concert spirituel with great applause, he was placed at the head of the prince of Conti's select band. In 1781 he was appointed concert-master to the king of Prussia at Berlin, after refiding some time in London, and leading at the Opera. He was one of the most certain and agreeable performers on the violin of his time, particularly in trios and quartets. He was likewise a composer of considerable merit, having furnished the different theatres of Paris with fixed or eight successful musical dramas, and the performers on his instrument with several books of solos, quartets, and concertos, which were practicable and in a pleasing style. He had an extreme melancholy expression of countenance, of which he was insensible, and used to say, in pleasantry, "Ma triste contenance m'a fait beaucoup de mal auprès des dames."

**VACIA, or Vacz**, in Geography. See Waitzen.

**VACIAN**, a town of Abalica; 15 miles S. of Alkasy.

**VACKALEER**, a town of Hindooaltan, in Mylof; 27 miles E.N.E. of Calcutta.

**VACOMAGI**, in Ancient Geography, a people of the isle of Albion, S. of the Caledonii, whose towns were Banatica, Tamaa, the Winged Camp, or Alata Caftra, and Tusells.

**VACONE**, in Geography, a town of the Popedom, in the duchy of Spoletto; 8 miles S.E. of Narni.

**VACONTIUM**, in Ancient Geography, a town of Lower Pannonia, at a distance from the Danube.

**VACUA, Ital., in Myfie, a white open note; in old English, a void; in opposition to notes with black heads, like crotchetts and quavers. In the first time-table all the notes were black, till the invention of the fermubre and minim.**

**VACUNA**, in Mythology, a goddess held in high veneration among the Sabines.

**VACUNALIA**, a festival kept in honour of the goddeess Vacuna, who presided over those that were unemployed or at rest.

It was celebrated in December by the country labourers, after the fruits were gathered in, and the land tilled.

Ovid speaks of it in his *Fasti*, lib. vi.

"Nam quoque cum funt antiquæ sacra vacuna, Aut vacunæ flautæque, lenteque flutes."

The worship of Vacuna was very ancient in Italy, and embellished among the Sabines long before Rome was founded. Some take her for Diana, Venus, or Ceres, and others for Bellona or Victory. Varro thinks she was Minerva.

**VACUP**, in Geography, a town of Bosnia; 32 miles S. of Zerje.

**VACUUM, Vacuity**, in *Physics*, a space empty or devoid of all matter, or body.

Whether there be any such thing in nature as an absolute vacuum; or whether the universe be completely full, and there be an absolute plenum, is a thing that has been controverted by the philosophers of all ages.

The ancients, in their controversies, distinguished two kinds; a *vacuum coacervatum*, and a *vacuum interpersum*, or *dispersinatum*.

"Vacuum coacervatum, is conceived as a place destitute of matter; such, e. gr. as there would be, should God annihilate all the air, and other bodies within the walls of a chamber."

The existence of such a vacuum is maintained by the Pythagoreans, Epicureans, and the Atomists, or Corpuscularians; most of whom assert such a vacuum actually to exist, without the limits of the sensible world. But the modern Corpuscularians, who hold a *vacuum coacervatum*, deny that appellation; as conceiving, that such a vacuum must be infinite, eternal, and uncreated.

According, then, to the later philosophers, there is no *vacuum coacervatum* without the bounds of the sensible world; nor would there be any other vacuum, provided God should annihilate divers contiguous bodies, than what amounts to a mere privation, or nothing; the dimensions of such a space, which the ancients held to be real, being by them held to be mere negations; that is, in such a place, there is so much length, breadth, and depth wanting, as a body must have to fill it. To suppose, that when all the matter in a chamber is annihilated, there should yet be real dimensions, is to suppose corporeal dimensions without body; which is absurd.

The Cartesians, however, deny any *vacuum coacervatum* at all; and assert, that if God should immediately annihilate all the matter, e. gr. in a chamber, and prevent the ingress of any other matter, the consequence would be, that the walls would become contiguous, and include no space at all. They add, that if there be no matter in a chamber, the walls can be conceived no otherwise than as contiguous; those things being said to be contiguous, between which there is not any thing intermediate; but if there be no body between, there is no extension between; extension and body being the same thing; and if there be no extension between, then the walls are contiguous, and where is the vacuum?

But this reasoning is founded on a mistake, viz. that body and extension are the same thing. See Matter.

**Vacuum dispersinatum, or interpersum**, is that supposed to be naturally interpersed in and among bodies, in the pores of the same body, and in the interstices between different bodies.

It is this kind of vacuum which is chiefly disputed among the modern philosophers; the Corpuscularians strenuously afforting it; and the Peripatetics and Cartesians as tenaciously impugning it. See *Cartesian* and *Leibnitzian*.

The great argument the Peripatetics urge against a *vacuum interpersum* is, that there are divers bodies frequently sent to move contrary to their own nature and inclination; and that for no other apparent reason, but to avoid a vacuum; whence they conclude, that nature abhors a vacuum, and gives us a new class of motions ascribed to the *fuga vacui*, or nature's flying a vacuum. Such, they say, is the rife of water in a syringe, upon the drawing up of the piston; such also is the ascent of water in pumps, and the
But motion, circles but It the material. motion other-and, it both. ” There a can from the vacuum, at the same time that he admits it. Des Cartes, if we may believe some accounts, rejected a vacuum from a compliance to the table which prevailed in his time, against his own first sentiments; and among his familiar friends used to call his system his philosophical romance.

On the other hand, the corpuscular authors prove, not only the possibility, but the actual existence of a vacuum, from divers considerations; particularly from the consideration of motion in general; and that of the planets, comets, &c. in particular; from the fall of bodies; from the vibration of pendulums; from rarefaction and condensation; from the different specific gravities of bodies; and from the divisibility of matter into parts.

1. It is argued, that motion could not be effected without a vacuum. This is what Lucretius urged long ago. “Principium quoniam sedendi nulla dare res—unde materies quoniam ripata fuifeit.”

The force of this argument will be increased from the two following considerations; viz. first, that all motion is either in a straight line, or in a curve, which returns into itself, as the circle and ellipsis; or in a curve that does not return into itself, as the parabola, &c. And, secondly, that the moving force must always be greater than the resistance.

From hence it follows, that no force, even though infinite, can produce motion where the resistance is infinite; consequently, there can be no motion either in a straight line, or in a non-returning curve; because, in either of those cases, the propulsion, and consequently the resistance, would be infinite. There remains, therefore, only the motion of a revolving curve practicable; this must either be a revolution upon an axis, or an annular motion round a quiescent body; both which are, again, impossible in an elliptic curve; and, consequently, all motion must be in circles geometrically true; and the revolving bodies must either be spheres, spheroids, cylinders, or portions of them, exactly geometrical; otherwise the revolutions in a plenum would be impossible: but such motions, or such figured bodies, we do not know in nature. Therefore there is a vacuum.

2. The motions of the planets and comets demonstrate a vacuum: thus Sir Isaac Newton,—“That there is no such fluid medium as ether,” (to fill up the porous parts of all sensible bodies, as the air and interstellar parts, and so make a plenum,) “seems probable; because the planets and comets proceed with so regular and lasting a motion through the celestial spaces, both from and to all parts; for hence it appears, that those celestial spaces are void of all sensible resistance, and consequently of all sensible matter. For the refitting force of fluid mediums arises partly from the attrition of the parts of the medium, and partly from the inactivity of matter. Now, that part of the resistance of any medium, which arises from the tenacity or attrition of its parts, may be leifened by dividing the matter into smaller parts, and rendering those parts more smooth and slippery: but that part of the resistance which arises from the inactivity of matter, is always in proportion to the density of the matter; nor can it be diminished by dividing the matter, nor by any other means, except by diminishing the density thereof.

“Consequently, if the celestrial regions were as dense as water, or as quicksilver, they would resist almost as much as water or quicksilver; but if they were perfectly dense without any interfered vacuity, though the matter were ever so fluid and subtle, they would resist more than quicksilver does: a perfectly solid globe, in such a medium, would lose above half its motion, in moving three lengths of its diameter; and a globe not perfectly solid, such as the bodies of the planets and comets are, would be stopped still sooner. Therefore, that the motion of the planets and comets may be regular and lasting, it is necessary the celestial spaces be void of all matter, except perhaps some few, and much rarer effulgia of the planets and comets, and the paling rays of light.”

3. The same great author deduces a vacuum also from the consideration of the weights of bodies; thus: “All bodies about the earth gravitate towards the earth; and the weights of all bodies, equally distant from the earth’s centre, are as the quantities of matter in those bodies. If the ether, therefore, or any other subtle matter, were altogether destitute of gravity, or did gravitate less than in proportion to the quantity of its matter; because (as Ariflotle, Des Cartes, and others, argue) it differs from other bodies only in the form of matter; the same body might, by the change of its form, gradually be converted into a body of the same constitution with those which gravitate most in proportion to the quantity of matter: and, on the other hand, the most heavy bodies might gradually lose their gravity, by gradually changing their form; and therefore the weights would depend upon the forms of bodies, and might be changed with them; which is contrary to all experiment.”

4. The descent of bodies proves, that all space is not equally full; for the same author goes on, “If all spaces were equally full, the specific gravity of that fluid with which the region of the air would, in that case, be filled, would not be less than the specific gravity of quicksilver or gold, or any other the most dense body; and therefore neither gold, nor any other body, could descend therein. For bodies do not descend in a fluid, unless that fluid be specifically lighter than the body. But, by the air-pump, we can exhaust a vessel, till even a feather shall fall with a velocity equal to that of gold in the open air: the medium, therefore, through which this feather falls, must be much rarer than that through which the gold falls in the other case.

“The quantity of matter, therefore, in a given space, may be diminished by rarefaction: and why may not it be diminished in infinitum? Add, that we conceive the solid particles of all bodies to be of the same density; and that they are only rarefiable by means of their pores: and hence a vacuum evidently follows.”

5. “That there is a vacuum, is evident from the vibrations of pendulums; for since those bodies, in places out of which the air is exhausted, meet with no resistance to retard their motion, or shorten their vibrations; it is evident there is no sensible matter in those spaces, or in the occult pores of those bodies.”

As to what Des Cartes urges of his materia subtilis, that its tenity prevents its resistance from being sensible; and that a small body, striking against a greater, cannot in the least move, or reft the motion of that other; but is reflected
VACUUM.

flecked back again with all its momentum; it is contrary to all experience. For Sir Isaac proves, that the densit

y of fluid mediums is proportionable to their refifiances, very nearly; and that they are exceedingly mistaken, who sup-

pose the refifiance of projectiles to be infinitely diminished, by dividing the parts of the fluid, even in infinitum (Prin-

cip. lib. ii. prop. 38.); when, on the contrary, it is clear the refifiance is but little diminished by the subdivi-

"on of the parts (ibid. prop. 40.), and that the refifling forces of all fluids are nearly as their densities.—For why should not the fame quantity of matter, whether divided into a great number of minute parts, or into a few larger ones, have the fame refifling force? If then there were no vacuum, it would follow, that a projectile moving in the air, or even in a space where the air is exhausted, should move with as much difficulty as it would in quicksilver; which is contrary to experience.

Nor will it avail to suppute the particles of the subtile fluid, constituting a plenum, to move contantly and equally in all directions; and by favour of this hypothenes, to imagine that they act, but do not refit. Becauze the motion of a fluid favours the motion of a body in it, only as far as it is in the fame direction; and an intellent motion of the parts of the fluid, equal in all directions, cannot make the refifiance less; if there was no motion of the parts. It is suppute by many that the particles of common fluids, e.g. water or air, are in a contant intellent motion, but this does not hinder those fluids from refifiting in proportion to their densi-

ty.

If it should be alleged, that by supposing this dense fluid which replenifhes space to penetrate the pores of bodies with the utmost freedom, (as light paffes through transparent bodies, and the magnetic and elec
ctric effluvia through moft kinds of bodies,) its refifiance will then be incomparably less than in proportion to its densi-
y; the refifiance in this cafe not being measured by the densi-
y of the fluid, because the greater part paffes through the pores of the body in motion freely, without refifiance; yet even on this hypothenes, the refifiance of a golden ball in a plenum would be still very great. For this subtile fluid, how penetrating ever it be, must refit the solid parts of the ball; which cannot move in the fluid without displacing its parts, and losing as much motion as must be communicated to those parts; and this refifiance depends on the quantity of solid parts in the ball; whereas the refifiance which the same ball meets with in quicksilver (which we suppute to have no paf-
fage through the ball), depends on the quantity of the solid parts in an equal bulk of the quicksilver, which must be moved to make way for the ball. And this being less than the quantity of solid parts in an equal bulk of the golden ball, in proportion as the specific gravity of quick-
silver is less than that of gold, it follows that the refif-
inance of a golden ball, moving in quicksilverpenetrating plenum, would still be greater than its refifiance in quick-
silver. The refifiance of a golden ball in a plenum (how freely ever the matter constituting it paffes through the pores of the ball, and how large and numerous pofee these pores may be) must correspond to the solid matter in the ball; which is greater than the solid densiti in any equal bulk of any of our fluids, upon which their refi-

fiance depends.

6. That there are interfpered vacuities, appears from matter's being actually divided into parts, and from the figures of those parts; for, on supposition of an abolute plenitude, we do not conceive how any part of matter could be actually divided from that next adjoining, any more than it is poible to divide actually the parts of abolute space from one another: for by the actual division of the parts of a continuum from one another, we conceive nothing else under-

stood, but the placing of those parts at a distance from one another, which, in the continuum, were at no distance from one another: but such divisions between the parts of matter must imply vacuities between them.

7. As for the figures of the parts of bodies, upon the supposition of a plenum, they must either be all rectilinear, or all concavo-convex; otherwise they would not adequately fill space; which we do not find to be true in fact.

8. The denying a vacuum, supposes what it is impossi-

ble for any one to prove to be true; viz. that the material world has no limits.

However, we are told by fome, that it is impossi-

ble to conceive a vacuum. But this purely must proceed from their having imbibed Des Cartes's doctrine, that the effence of body is conflituted by extenfion; as it would be contra-
dictory to suppute fpace without extenfion. To suppute that there are fluids penetrating all bodies and replenifhing fpace, which neither refit nor act upon bodies, merely in order to avoid admitting a vacuum, is feigning two forts of matter, without any necelility or foundation; or is tacitly giving up the qeuestion.

Since then the effence of matter does not confit in ex-
tenfion, but in solidity, or impenetrability, the univerfe may be faid to confit of solid bodies moving in a vacuum: nor need we at all fear, left the phenomena of nature, moft of which are plausibly accounted for from a plenitude, should become inexplicable when the plenum is fet aside. The principal ones, fuch as the tides: the fufpenfion of the mercury in the barometer; the motion of the heavenly bodies, and of light, &c. are more eafily and satisfactorily accounted for from other principles. See Tides, &c.

VACUUM, or Vaccum Boyleanum, is also used, somewhat more abutively, to express that approach to a real vacuum, which we arrive at by means of an air-pump.

Thus, any thing put in a receiver fo exhausted, is faid to be put in vacuo; and thus, most of the experiments with the air-pump are faid to be performed in vacuo, or in vacuo Boyleanum. Some of the principal phenomena observed of bodies in vacuo, are; that the heaviest and lighteft bodies, as a guinea and a feather, fall here with equal velocity: that fruits, as grapes, cherries, peaches, apples, &c. kept for any time in vacuo, retain their nature, freihness, colour, &c. and thofe withered in the open air recover their plump-

ness in vacuo:—all light and fire become immediately extinct in vacuo:—the collifion of flint and fteel in vacuo, produces no fparks:—no sound is heard, even from a bell rung in vacuo:—a fquare phial, full of common air, well clofed, breaks in vacuo: a round one does not:—a bladder half full of air will heave up forty pounds weight in vacuo:—cats, and moft other animals,foon expire in vacuo.

By experiments made in 1754. Dr. Derham found, that animals that have two ventricles, and no foramen ovale, as birds, dogs, cats, mice, &c. die in fles less than half a minute; counting from the firft exfutation: a mole died in one minute, a bat lived seven or eight. Infetts, as wafps, bees, grafs-hoppers, &c. feemed dead in two minutes; but, after being left in vacuo twenty-four hours, they came to life again in the open air:—flies continued twenty-four hours in vacuo, without appearing much incommoded.

Seeds planted in vacuo do not grow:—small beer dies, and loses all its taffe, in vacuo:—lukewarm water boils very vehemently in vacuo:—and air, refuming through mercury into a vacuum, throws the mercury in a kind of shower upon the receiver, and produces a great light in a dark room.

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The air-pump can never produce a perfect vacuum; as is evident from its structure, and the manner of its working; in effect, every exsuction only takes away a part of the air: so that there will still be some left after any finite number of exsuctions. Add, that the air-pump has no longer any effect than while the spring of the air remaining in the receiver is able to lift up the valves: when the rarefaction is come to that degree, you may come nearer to a vacuum. Sir Isaac Newton, observing that a thermometer suspended in vacuo, and in that state removed to a warm or a cold room, receives the heat or cold, and rises, or falls, almost as soon as another in open air; takes thence occasion to infer, that the heat of the warm room is conveyed through the vacuum, by the vibrations of a much subtler medium than air, which remained in the vacuum after the air was drawn out. Opt. P. 323.

VACUUM. Torricellian. See Torricellian.

VADA, in Ancient Geography, a place which belonged to the Batavi, W. of Batavodurum. VADA Sabatia, Vai, a town of Italy, in Liguria. VADA Volaterra, a place of Italy, in Etruria. VADA, in Geography, a sea-port town of Etruria, at the mouth of the river Cecina; 18 miles S.W. of Volterra. N. lat. 43° 17'. E. long. 10° 30'. VADACOURCHY, a town of Hindoostan, in Calcut; 10 miles S.W. of Palicaudchery. VADAGARY, a town of Hindoostan, in Madura; 25 miles W. of Coillpetta. VADAMADERRY, a town of Hindoostan, in the province of Dindigul; 15 miles N.E. of Dindigul. VADAMI, a town of the Arabian Iрак, on the Euphrates; 105 miles W.N.W. of Baflora. VADARI, in the Civil Law, denotes a person to pledge, undertake, or give security, in behalf of another, that he shall, on a certain day, appear in court, to prosecute, or answer.

If he fails, his surety has an action vadimoni dediti against him; that is, an action for defecting his bail. See Wager.

Properly speaking, vadari reum, among the Romans, was the act of the plaintiff himself, who here demanded surety, or bail from the defendant, that he would appear before the pretor on a certain day. VADALL, in Geography, a town of Hindoostan, in Soonda; 27 miles S.E. of Goa. VADDAR, Louis de, in Biography, an eminent landscape painter, was born at Bruxelles in 1560. It is not known under whom he studied, where he resided, or how long he lived; but he has left works behind him which exhibit him as a diligent observer of nature, with taste and feeling to select her most fascinating effects, and ability to execute what he attempted, so as to afford the greatest pleasure to all admirers of the art.

It is not improbable that he resided some time in Italy, and had studied the pictures of Titian; perhaps wrought in the same scenery; for his finest works have a great degree of resemblance to those of the Venetian, in the choice of forms and colour however more than in the execution, in which he more resembles Pynacher in freshness and fulness.

Two large pictures by Vadder found their way into this country some time ago, and fully justify these remarks; but in general his works are scarce, or most probably have been introduced under fictitious names. In his native country he is better known and justly esteemed. He has left a few spirited etchings in the style of Lucas Van Uden.

VADE, John Joseph, was born at Ham, in Picardy, and is distinguished as the inventor of a kind of humorous French poetry. In his youth he resided at Paris, and led a dilapidated life; but in more advanced age he perceived the defects of his early education, and endeavoured to supply them by a perusal of the best French authors. As he was original in his mode of thinking, he adopted a new kind of writing, to which he was led by his familiarity with vulgar life. This species of writing was called the "Poifarde manner," and he was hence denominated the "Teniers" of poetry. His productions, which consisted of tales and fongs, were amusing and popular; and as he professed many amiable qualities, he was generally beloved in the gay societies which he frequented. But he was thus led to pursue a course of debauchery, which terminated his life in 1757, at the early age of 37 years. His works, consisting of comic operas, parodies, fongs, &c. have been collected in 4 vols. 8vo., to which has been added a volume of poetical pieces of a familiar nature, though of superior merit, and indicating talents of a higher clafs, which he might have cultivated to advantage. Moreri. Nouv. Dict. Hill.

VADELECT. See Valet.

VADE-MECUM, or a VENI-MECUM, a Latin phrase, used in English, to express a thing that is very familiar; and which any one usually carries about with him: it is chiefly applied to some favourite book.

Some make Virgil, others Horace, their va de mecum; others an Epictetus, &c.

This is what the Greeks call εκποίησις, or manual. The Arabs have a phrase of equal import; viz. Habib al fat' ir, comes itineris, companion of the journey. In Latin it is better expressed by comes; as comes theologicus, comes ruf ticus, &c.

VADENAGORCHY, in Geography, a town of Hindoostan, in Combeatore; 15 miles W. of Damicotta.

VADIANUS, Joachim, in Biography, was born in 1484, at St. Gall in Switzerland, where his father, Leonard Von Watt, was a senator. Having studied at Vienna, he was chosen professor of the belles lettres, and rector of the univeristy. In 1514 he was honoured at Lintz by the emperor Maximilian with the poetical title. In his subsequent travels, he applied to the study of geography, and in 1518, having taken the degree of M.D. at Vienna, he returned to St. Gall, and devoted himself to the practice of physic, to which he joined theology upon the principles of the reformers, whose cause he promoted as a senator, and also by his discourses and writings. Having been honoured eight times with the office of confal, he died in 1551, and bequeathed his library to his fellow-citizens. On the various subjects of mathematics, geography, antiquities, medical, and theology, he published works, as well as several Latin poems. His "Commentary on Pomponius Melas de Situ Orbis," and his "Scholia on the second Book of Pliny's Natural History," are the most generally known of his literary performances. Scaliger regarded Vadianus as one of the most learned men in Germany; and on account of his able conduct of public affairs, Thuanus prays him to notice, as an example, that men of letters and philosophers are not, such, disqualified for business. Moreri.

VADINATION. See Vadar.

VADICASSES, in Ancient Geography, a people of Gaul, who have been distinguished by different denominations: the Bodicasses of Pliny being the same with the Vadicasses of Ptolemy, and both are supposed to comprehend the ancient inhabitants of Bayeux, anciently called Neomagus.

VADILCORA, or Vadi al Kera, in Geography, a town
VLG

town of Arabia, in the province of Hedjes; 36 miles N.
of Medina. N. lat. 25° 30'. E. long. 38° 20'.

VADIMONIS LUCUS, in Ancient Geography, a lake of
Italy, in Etruria, in the vicinity of Ameria.

VADIMONIUM, in the Civil Law, a promontry, or
bond, given for appearance before the judge upon a
day appointed. See VADARI.

VADIN, in Geography, a town of European Turkey,
in Bessarabia, on the Danube; 32 miles W. of Nicopoli.

VADIVUM. See GAGE and PONI PER VADIVIUM.

VADNIA, in Ancient Geography, a town of Hither
Spain, belonging to the Cantabri. Potenomy.

VADO, or VADI, in Geography, a sea-port town of
the Genoese, situated in a bay of the Mediterranean, with
a good harbour; 3 miles S. of Savona. N. lat. 44° 14'.
E. long. 8° 30'.

VADO, il., a town of Naples, in Aburuzzo, in the
Adriatic; 16 miles E.S.E. of Lannfano.

VADO SERTIA, a town of Naples, in Capitanata; 6 miles
S.E. of Troia.

VADOCONDES, a town of Spain, in old Catfide; 26
miles W.S.W. of Olma.

VADORANUM, a town of Hindooftan, in the Car-
natic; 12 miles S. of Negapatam.

VADUTZ, a town and castle of Germany, in the
province of Lichtenstein; 26 miles S. of Lindau. N.
lat. 47° 5'. E. long. 9° 51'.

VÆIPO, a small island in the Baltic, near the north
coast of Lolland. N. lat. 55° 57'. E. long. 10° 46'.

VÆLUE, a river of the island of Ceylon, which runs
into the sea, near Mago.

VA-EMBU, in the Materia Medica, a name given by
some authors to the curcus Asaticus, or Asiatic sweet
flag.

VAENA, in Geography, a town of Spain, in the pro-
vince of Cordova; 18 miles E.S.E. of Cordova.

VÆRO, a small island in the North sea, about 20
leagues from the coast of Norway. N. lat. 67°.

VÆSPA, in Ancient Geography, a town of Asia, in
the Lesser Armenia, towards the mountains, and at a
distance from the Euphrates.

VAG BESTER, in Geography, a town of Hungary, on
the river Vag; 6 miles N.E. of Bolesko.

VAGA, PIOERINO DEL, in Biography, whose real name was
Pietro Buonacorso, was one of those ingenious painters em-
ployed by Raphael to assist him in adorning the Vatican.
He was born at a village near Florence in 1500, of indigent
parents. His father was killed in battle, and his mother
died of the plague before he was two months old. He is
said to have been reared by goat's milk, and as a destitute
orphan, was taken under the protection of an indigent
artist named Andrea de Ceri, whose house was frequented
by several young artists of Florence.

As Pierino had discovered an decided inclination for paint-
ing, he was placed, when eleven years old, under the tu-
thion of Ridolfo Ghirlandajo, and with his affilience soon
came to be a very able designer, and more particularly, as Vafari ob-
erves, by studying with many other Florentine youths as
well as strangers the Cartoon of M. Angelo, known by the
name of the Cartoon of Pisa.

His talents acquired for him the attention and approba-
tion of a Florentine painter of inferior quality, but who had
nevertheless much employment, and was in want of a skil-
ful designer to assist him in conducting his undertakings.
With the consent of his guardian Ceri, Pierino accom-
pnied this man, whose name was Vaga, to the neighbour-
hood of Rome, whence, when the work was completed which
he had undertaken, he was conveyed by his employer to Rome
in 1515, and there introduced to several painters, to whose
care and assistance II Vaga recommended him during his ab-
ence; and thence he was called Pierino del Vaga. In Rome
he endured great miseries, and obtained bread with diffi-
culty; but ever intent upon improvement, he studied
hard the pictures of Angelo di Sifilini, and designed
from the pieces of antique sculpture which by chance came
to his hand, and after a short time, his ardent exertions
were reaided by a degree of success, which led to his adop-
tion into the school of Raphael.

Julio Romano and Francesco Penni first did justice to his
talents by recommending him to their master, who, upon the
first sight of his productions, placed him under Giovanni da
Udine, who had the management of the ornamental parts of
the works then going on in the Vatican. But Pierino
was soon found equal not only to assist Giovanni in the gro-
tique ornaments and in the tuccoss, but also Polidoro da
Caravaggio in the antique subjeets in chiaro-creo, and
sometimes also in executing the sculpture subjects from the
sketches of Raphael, as among others may be seen, accor-
ding to Vafari, in the Hebrews crossing the river Jordan,
the surrounding Jericho, the combat of Joshua with the
Amorites, Abraham preparing to sacrifice Isaac, Jacob
wrestling with the angel, Joseph and his brethren, &c. &c.
The praise which he gained by these labours inspired him
only with a more earnest desire to improve, and the mildna-
and attention of his manner procured for him the esteem
and even love of his master Raphael.

After the death of Raphael, he was employed, with
J. Romano and G. F. Penni, to continue and complete the
adornment of the Vatican, great part of the execution of
which is the work of Del Vaga.

For a short time he went to Florence, when the pope
Leo X. was there, but quickly returned to Rome and pur-
shed his labours, adding to them many original ones, the
inventions of his own mind. Among them was the hall of
the house of Machiome Baldallini, which he adorned with
subjects from the Roman history, with arms, trophies, &c.
Perhaps the most perfect of these minor works was the
birth of Eve, which he painted in the church of S. Mar-
cello, and in which he exhibited his decided predilection
for the style of the Florentine school, and the successes
which he had studied the works of M. Angelo.

Pierino was in full possession of public repute when he
was compelled to fly for safety from Rome, by the lacking
of that city in 1527. He took refuge in Genoa, where he
was graciously received by prince Doria, who at that time
projected the embellishment of his superb palace near the
gate of St. Thomas. He had here a full opportunity of
displaying his imagination, as well as his executive powers;
and here he indulged in those inventions which breathe the
spirit of Raphael himself, and rival the exertions of his
fellow pupil J. Romano, in the palace del T at Mantua:
both do honour to the school they had studied in, and the
patron who employed them. He is said not to have been
sufficiency scrupulous in the choice of his coadjutors,
and the grandeur of his designs is consequently weakened
by their imperfect execution. He died at Rome in 1547,
age 47.

VAGA, TAGADUMPT or FUSUMA, in Ancient Geography, a
town of Africa, in Mauritania Caesariens, E. of Cieta.
Potenomy. This town, named Baga by Plutarch, was
situated S.E. of Victoria. It was one of the episcopal
sees of Numidia.

VAGA, in Geography, a river of Ruffia, which rises
near Poprovilco, in the government of Vologda, and runs
into
into the Dwina, at Ut Vagkoi, in the government of Archangel.

VAGABOND, a person that wanders about, having no certain dwelling; or a sturdy beggar, &c. mentioned in divers statutes.

"De vagabundis, et alius hominibus mendicantibus, qui se nominant."—Travelling men, &c. Charta 22 Hen. VI.


All itinerant beggars, fortune-tellers, collectors for gaols, fencers, bearers, players of interludes, minstrels, jugglers, gypsies, &c. shall be reputed vagabonds, rogues, and sturdy beggars. 39 Eliz. c. 4.

The court of Areopagus at Athens punished idlenes, and exercised a right of examining every citizen in what manner he spent his time. The civil law expels all sturdy beggars from the city; and, in our own law, all idle per- sons or vagabonds, (whom our ancient statutes desirous to be "such as wake in the night, and sleep in the day, and haunt cumbous taverns, and alehouses, and routs about; and no man wit from whence they come or whither they go;" or such as are more particularly described by statute 17 Geo. II. c. 5. called the Vagrant Act, and divided into three classes, idle and disorderly persons, rogues and vagabonds, and incorrigible rogues,) are offenders against the good order, and blemishes in the government, of any kingdom.

Idle and disorderly persons are thus described by the said statute: viz. all persons who threaten to run away, and leave their wives or children to the parish: all persons who shall unlawfully return to the parish or place from whence they have been legally removed by order of two Justices, without bringing a certificate from the parish or place whereunto they belong: all persons, who, not having where- with to maintain themselves, live idle without employment, and refuse to work for the usual and common wages given to other labourers in the like work, in the parishes or places where they are: all persons going about from door to door, or placing themselves in streets, highways, or passages, to beg or gather alms in the parishes or places where they dwell. And by 32 Geo. III. c. 45: all persons who by their wilful default and neglect permit their wives and children to become chargeable to their parishes or places; and it shall be made appear to two Justices that such persons do not use proper means to get employment, or being able to work do neglect to work, or spend their money in ale- houses or places of bad repute, or in any other improper manner, and do not employ a proper proportion of the money earned by them towards the maintenance of their wives and families, by which they or any of them become chargeable to such parish or place; and these shall be deemed idle and disorderly persons.

Rogues and vagabonds are, by the same statute, such as follow: viz. all persons going about as patent-gatherers, or gatherers of alms, under pretence of love by fire, or other casualty; persons going about as collectors for prisons, gaols, or hospitals; fencers; bearers; common players of interludes, and all persons who shall for hire, gain, or reward, act, represent, or perform, or cause to be acted, represented, or performed, any interlude, tragedy, comedy, opera, play, farce, or other entertainment of the stage, or any part therein, not being authorized by law; minstrels; jugglers; and all persons pretending to be gypsies, or wandering in the habit or form of Egyptians; fortune-tellers, or persons pretending to have skill in physiognomy, pal- mistry, or like crafty science, or to tell fortunes; or using any futile craft, to deceive and impose on any of his ma- jefty's subjects; or playing or betting at any unlawful games or plays; all persons who run away, and leave their wives or children, whereby they become chargeable to any parish or place; all petty chapmen, and pedlars, wandering abroad, not being duly licensed, or otherwise authorized by law; all persons wandering abroad, and lodging in alehouses, barns, out-houses, or in the open air, not giving a good account of themselves; all persons wandering abroad, and begging, pretending to be soldiers, mariners, or seafaring men (but by 43 Geo. III. c. 61. soldiers, sailors, marines, and the wives of soldiers therein mentioned, are relieved against the penalties of the vagrant acts); or pretending to go to work in harvest, without a certificate signed by the minister, and one of the churchwardens or overseers where he shall inhabit, that he hath a dwelling-house or place there; illegally dealing in lottery tickets and shares; per- sons to the number of two or more assembling to destroy game in the night-time (39 & 40 Geo. III. c. 50.); and all other persons wandering abroad and begging, shall be deemed rogues and vagabonds. By 23 Geo. III. c. 88. any person apprehended, having upon him any picklock key, crow, jack, bit, or other implement, with an in- tent feloniously to break and enter into any dwelling-house, warehouse, coach-house, stable, or out-house, or who shall have upon him any pistol, hanger, cutlises, bladgeton, or other offensive weapon, with intent feloniously to assault any per- son; or shall be found in or upon any dwelling-house, warehouse, coach-house, stable, or out-house, or in any in- closed yard or garden, or area belonging to any house, with intent to steal any goods or chattels, shall be deemed a rogue and vagabond within the meaning of the statute of the 17 Geo. II. So also by 39 & 40 Geo. III. c. 87. suspected persons and reputed thieves frequenting the Thames, and the quays and warehouses, &c. adjoining, with a felonious intent.

Incorrigible rogues are by 17 Geo. II. c. 5. thus de- scribed: all end-gatherers offending against the statute of 13 Geo. I. being convicted of such offence, which offence, by 13 Geo. I. c. 23. is this, viz. the collecting, buying, receiving, or carrying any ends of yarn, wefts, thrums, short yarn, or other refuse of cloth, drugget, or other woollen goods; and the punishment of such persons is in order to prevent their committing abuses, by such practices, in the woollen manufacture: all persons apprehended as rogues and vagabonds, and escaped from the persons apprehending them; or refusing to go before a justice; or to be examined on oath before such justice; or refusing to be conveyed by such pass as is hereinafter directed; or knowingly giving a false account of themselves on such examination, after warn- ing given them of their punishment: all rogues or vagabonds who shall break or escape out of any house of correction, before the expiration of the term for which they were com- mitted or ordered to be confined by this act: all persons who, after having been punished as rogues and vagabonds, and discharged, shall again commit any of the said offences: all these shall be deemed incorrigible rogues. To which may be added, any person convicted of a third offence against the 6 Geo. III. c. 48.

Idle and disorderly persons are punishable by the statute 17 Geo. II. c. 5. with one month's imprisonment in the house of correction, upon conviction before one justice, by his own view, confession, or oath of one witness. Any per-
person may apprehend or carry before a justice any such person, going about from door to door, or placing themselves in streets, highways, or passages, to beg alms in the parishes or places where they dwell; and if they shall refuse, or escape from the person apprehending them, they shall be punished as rogues and vagabonds. The reward for apprehending is 5s., to be paid under order of the justice, by any overeer where such offender shall be apprehended.

Rogues and vagabonds are to be apprehended by a constable, or any other person, and conveyed to a justice of the peace. The reward for apprehending is 10s. by order of the justice, payable by the high constable, or, in case of no high constable, by the petty constable; and on refusal, the justice may, by his warrant levy the sum of 20s. by distress and sale of the constable's goods, &c. (17 Geo. II. c. 5.) But the justice shall not order the reward to be paid until the rogue or vagabond be publicly whipped (women excepted), or sent to the house of correction, and till the examination required by the said act shall be actually transmitted to the next sessions. (32 Geo. III. c. 45.) The penalty for not apprehending such offender shall be, on conviction before a justice, or view or oath of one witness, a forfeiture of 10s. to the poor by distress. The justices, or any two of them, shall, four times a year at least, order by warrant search for and apprehension of rogues and vagabonds. (17 Geo. II. c. 5.) And by 25 Geo. II. c. 36. two justices may examine persons apprehended on a privy search on oath as to their settlement and means of livelihood; and upon their failure of shewing that they have a lawful way of getting a livelihood, or of procuring some responsible housekeeper to testify to their character, and to give security (if required) for their future appearance, the justices may commit them to some prison or house of correction, for any time not exceeding six days, and order the overeers of the poor to advertise and describe them, &c.; and if no accusation shall be laid against them, they shall be discharged, or otherwise dealt with according to law. After examination by a justice, such justice shall order the offender apprehended to be publicly whipped by the constable, petty constable, or some other person appointed by them, or order him to be sent to the common gaol (32 Geo. III. c. 11.), or house of correction, till the next sessions, or for any less time (such time not being less than seven days, 32 Geo. III. c. 45.) as such justice shall think proper.—N.B. It is only here expressed generally, that he shall be publicly whipped; the form and manner thereof may perhaps be best collected from the provisions of former vagrant acts. By the 22 Hen. VIII. c. 12. the vagrant was to be carried to some market-town or other place, and there tied to the end of a cart naked, and beaten with whips throughout such market-town or other place, till his body should be bloody by reason of such whipping. By the 39 Eliz. c. 4. he was to be stripped naked from the middle upwards, and only whipped till his body should be bloody.

The justices of the next sessions, after commitment of the offender, may, after examination, order a rogue or vagabond to be detained in the house of correction to hard labour, for any further time not exceeding six months, and an incorrigible rogue for any further time not exceeding two years, nor less than six months; and during the time of confinement, to be whipped in such manner, and at such times and place, as they shall think fit. Such person may, if the justices think convenient, afterwards be sent away by a pass; and if such person, being a male, is above the age of twelve years, the court may, before he is discharged from the house of correction, send him to be employed in his majesty's service by sea or land; and if such incorrigible rogue, so ordered by the justices to be detained in the house of correction, shall break out or make his escape, or shall offend again in like manner, he shall be guilty of felony, and be transported for seven years. 17 Geo. II. c. 5.

By 13 & 14 Car. II. c. 12. the justices in seessions may transport such rogues, vagabonds, and sturdy beggars, as shall be duly convicted, and adjudged to be incorrigible. By 17 Geo. II. c. 5. if the child of any vagrant, above the age of seven years, shall be committed to the house of correction, the justices in seessions, if they see convenient, at any time before such child be discharged, may order such child to be placed out as a servant or apprentice to any person who is willing to take such child, till such child shall be of the age of 21 years, or for a less time; and if any offender, who was found wandering with such child, shall be again found with the same child which was so placed out, he shall be deemed an incorrigible rogue. Where any vagrants have been committed to the house of correction till the next sessions, if, on examination of such persons, no place can be found to which they may be conveyed, the justices shall order them to be detained and employed in the house of correction, until they can provide for themselves, or until the justices in seessions can place them in some lawful calling, as servants, apprentices, soldiers, mariners, or otherwise, either within this realm, or in the plantations in America.

After such whipping or confinement as aforesaid, the justice may, if he think convenient, by a pass under hand and seal, cause the offender to be conveyed to the place of his last legal settlement; but if it cannot be found, then to the place of his birth; or if he be under the age of 14 years, and have any father or mother living, then to the place of the abode of such father or mother, there to be delivered to some churchwarden or overseer. 17 Geo. II. c. 5.

And it shall be certified in the pass, that such person has been actually publicly whipped, or confined in the house of correction as aforesaid. 32 Geo. III. c. 45.

The justice shall make a duplicate of the pass and examination, and sign the same; and shall afterwards transmit the duplicate of the pass, annexed to the examination, to the next sessions, there to be filed and kept on record; and shall annex the duplicate of the examination to the pass, and send it with the same; and the said pass, examination and duplicate thereof, shall and may be read in any court of record as evidence. 17 Geo. II. c. 5.

And the justice who shall make the pass shall with the pass cause likewise to be delivered to the constable a note or certificate, ascertaining how they are to be conveyed, by horse, cart, or on foot, and what allowance such constable is to have for conveying them. The constable who shall receive such pass and certificate, shall convey the person accordingly to the direction of the pass, the next direct way to the place whither he is ordered to be sent, if it be in the same county, riding, division, corporation, or franchise; if not, he shall deliver the said person to the constable of the first town, parish, or place, in the next county, riding, division, corporation, or franchise, in the direct way to the place whither he is to be conveyed, together with the pass and duplicate of the examination, taking his receipt for the same. And such constable shall, without delay, apply to some justice in the same county or division, who shall make the like certificate, and deliver it to such constable, who shall with all speed convey such person unto the first parish town or place in the next county or division, in the direct way to the place to which he is to be conveyed; and so from one county or division to another, till they come to the place to which such person is sent. And the constable, who shall deliver
deliver such person to the churchwarden or other person ordered to receive him, shall at the same time deliver the said pafs, with the duplicate of the examination, taking their receipt for the same. And whereas the present mode of conveying vagrants in the custody of a constable is frequently insufficient, it is enacted, that the justices in seissen may order that all rogues and vagabonds apprehended within their liberties, and ordered to be conveyed by pafs, shall be conveyed by the master of the house of correction, or his servants, or by a constable, as they shall think proper; and they may make an order, that all constables, to whom rogues and vagabonds brought from another county are delivered, shall forthwith convey them to the nearest house of correction or within their liberty, to be afterwards removed by such master or his servants as aforesaid, and according to the provisions of the aforesaid act. 32 Geo. III. c. 45.

The passing of vagrants may be suspended on account of sickness by 33 Geo. III. c. 101.

By 49 Geo. III. c. 124. it is enacted, that in all cases whenever the execution of any order of removal, or of any vagrant-pafs, shall be suspended by virtue of the 33 Geo. III. c. 101. any other justice of the peace of the county, or other jurisdiction within which such removal or pafs shall be made, may direct and order the same to be executed, and the charges incurred to be paid, and may carry into execution any such amended orders, as fully as the same can be done by the justices who shall make the order of removal, or the justice who shall grant the pafs.

Any justice before whom a vagrant shall be carried may order him to be examined, and his bundles to be inspected, by the constable or other officer in his presence; and if it shall appear that such vagrant shall be found to have sufficient wherewithal to pay for his passage, either in whole or in part, the justice shall order so much of the money to be paid, or other effects found upon such vagrant to be sold, and employed towards the expense of taking up and passing such vagrant, returning the surplus, after deducting the charges of such sale. 17 Geo. II. c. 5.

The justices in seissen shall limit what rates and allowances, by the mile or otherwise, shall be made for conveying or maintaining rogues, vagabonds, or incorrigible rogues; and make such other orders for the more regular proceeding therein, as they shall think proper. 32 Geo. III. c. 45.

If any petty constable or governor of any house of correction shall counterfeit any such certificate or receipt, or knowingly permit any alteration to be made therein, he shall forfeit 50l. And if he shall not convey or cause to be conveyed such vagrants, or not deliver them to the proper person; or if any constable shall refuse to receive any such person, or to give such receipt, he shall forfeit 20l. by dirftress and sale, by warrant of the justices in seissen, where the offence shall be committed; half to the informer, and half to the treasurer, to be applied by him as part of the public stock; returning the overplus upon demand, charges of dirftress being first satisfied. 17 Geo. II. c. 5.

The parish or place to which any rogue, vagabond, or incorrigible rogue, shall be conveyed, shall employ in work, or place in some work-house or alms-house, the person so conveyed, until he shall take himself to some service or other employment; and if he shall refuse to work, or not betake himself to some service or other employment, the overseers may cause him to be carried to some justice, to be sent to the house of correction, there to be kept to hard labour. 17 Geo. II. c. 5.

But if the churchwarden, or other person who shall receive any person so sent, shall think the examination to be false, he may carry the person so sent before a justice, who, if he see cause, may commit such person to the house of correction till the next seissions; and the justices there, if they see cause, may deal with such person as an incorrigible rogue; but the person so sent shall not be removed from the place to which sent, but by order of two justices, in the same manner as other poor persons are removed to the place of their settlement.

If any person shall knowingly permit any rogue, vagabond, or incorrigible rogue, to lodge or take shelter in his house, barn, or other out-house or building, and shall not apprehend and carry him before a justice, or give notice to the constable so to do; and shall be convicted thereof by confession, or oath of one witness, before one justice, he shall forfeit not exceeding 40s. nor less than 10s. half to the informer, and half to the poor, by dirftress and sale; and if any charge shall be brought on any parish or place by means of such offence, the same shall be answered to the said parish or place by such offender, and be levied by dirftress and sale of his goods as aforesaid. And if sufficient dirftresses cannot be found, such offender shall be committed to the house of correction by the justice, for any time not exceeding one month. 17 Geo. II. c. 5.

To defray the expenses of apprehending, conveying, and maintaining rogues, vagabonds, and incorrigible rogues, and defraying all other expenses necessary for the execution of this act not herebefore provided for, the justices in seissen may cause such sums as shall be necessary to be raised in the same manner as the general county rate.

Any person aggrieved by any act of any justice out of seissen, in or concerning the execution of this act, may appeal to the next general or quarter-seissen of the county, riding, liberty, or division, giving reasonable notice thereof; whose order thereupon shall be final.

Persons sued for any thing done in the execution of this act may plead the general issue; and if they recover, shall have treble costs.

In all cities and towns, where by virtue of special acts of parliament the charge of passing vagrants is to be defrayed in other manner than by this act directed, or where such vagrants, by virtue of special statutes, are to be apprehended and conveyed by any person or officer, other than those named in this act, the same shall not be altered hereby. And persons conveyed in London, shall not be delivered in any other precinct within the city, but in the next county. 17 Geo. II. c. 5.

VAGAL, in Geography, a river of Russia, which runs into the Irithk, 8 miles S.E. of Tobolik.

VAGAL, in Ancient Geography, a town of Africa, in Mauritania Cæsariensis, on the route from Rufucurrum to Catama, between Gadaus Caelra and Callæum Tingitanum, according to the Itinerary of Antonine.

VAGENI, BAGENI, or Vagiani, a people of Italy, in Liguria, towards the sources of the river Erinon, according to Silius Italicus. Pliny calls them Vagianæ Ligures.

VAGERA, in Geography, a town of Arabia, in the province of Nendsch; 90 miles N.E. of Mecca.

VAGESAA, in Mythology, a name of the Hindoo god Siva. He is also called Vagesevara, or the lord Vaga; sometimes pronounced Bagis, and Bagilwar. His consort Parvati, as his energy or fakti, is named Vagefwari. (See Parvati and Siva.) In the latter article, it will be seen that some etymo-logists, from this similarity of name, strengthened by other characteristic coincidences, conceive Bagesa and Bacchus to be names of the same person.

VAGESWARA, a name of the Hindoo god Siva; meaning the lord Vagefa, as noticed under that article.

VAGINA,
VAGINA, a Latin term, literally signifying a sheath, or scabbard; used on divers occasions. *As,

VAGINA, in Architecture, is used for the lower part of a terminus; because resembling a sheath, out of which the statue seems to issue. See Terms.

The vagina is that long part between the base and the capital; and is formed in divers manners, and with divers ornaments.

VAGINA, in Anatomy, the membranous canal leading from the external organs of generation to the neck of the uterus, and receiving the male organ in coitus. See Generation.

The vagina is liable to an inflammation after delivery, occasioned by the head of the child being long retained in the pelvis. If the swelling and inflammation are not very great, they are generally removed by the discharge of the fochia; but if the internal membrane of the vagina be inflamed, emollient injections must be occasionally used, and a piece of prepared sponge should be introduced, to prevent its coagulating. The sponge may be thus prepared: Take a piece of a proper size for keeping the vagina open, when it is expanded; soak it in warm water; then roll it tight from end to end with a string; cut off any hard lumps, and lay it to dry; then take off the string, anoint it with lard, and introduce it into the vagina, the moisture of which will expand it. If the pressure on this part was so long continued, as to obstruct the circulation in it, a mortification will ensue, which may be either total or partial: if it be total, the patient will die; if partial only, the mortified parts will slough off. This may be known by great pain after delivery; a fetid smell, and a discharge of sharp ichor at first from the vagina, then pus and matter. When this is the case, emollient fomentations may be thrown up from time to time; doffs of lint may be dipped in some proper balm, and applied to the parts in order to deterge and heal them; and when the sloughs are all call off, great care should be taken to prevent the vagina from growing together, either by introducing doffs of lint, or pieces of sponge into it.

VAGINA, Imperforate. The vulva is liable to two different kinds of imperforation, which ought to be discriminated. First, the labia and symphysis may be every where united and blended together, the orifice of the meatus urinarius being totally covered by them, so that no urine can be voided. Secondly, the hymen may form a complete septum, or else some part of the vagina may be closed with a membrane of similar structure; in which circumstances, although the vagina be imperforate, there is no impediment to the free issue of the urine.

The first cafe constitutes a species of malformation, attended with the greatest urgency, and which indeed admits of no delay of that operation by which the conjointed parts are to be separated. The kind of raphé, situated where the natural opening ought to be, should be immediately sought for, and here the requisite division of the parts is to be made, the incisions being carried to the necessary depth, yet always with a cautious hand, lest an opening be made into the bladder, or rectum. Concretions of the labia and symphysis together may be the consequence of ulcerations of these parts; but the closure of the vulva is then never complete. The frequent evacuation of the urine separates the parts; and, if not capable of preventing their union entirely, it is at least sufficient to maintain an aperture opposite the meatus urinarius. The narrowness of the external opening, however, may obstruct the free discharge of the urine; and urinary calculi may even form more or less deeply in the vagina. Now, without taking into the account other functions of the sexual organs, the motives already explained are quite prepossessing enough to make the removal of the deformity right and advisable.

Before the age of puberty, no inconvenience can arise from the vagina being completely shut up by the hymen, or some other analogous membrane. But, at this period, the menstrual blood collects first in the vagina, and then in the uterus. Severe periodic colic pains, a gradual dilatation of the uterus, the absence of the menstes, impairment of the health, a variety of nervous complaints, and sometimes even inflammatory symptoms, which recur, or are exacerbated periodically, afford strong presumptive grounds for supposing an imperfection of the vagina. More information may be acquired from a careful examination of the parts. In the greater number of instances, the membranous septum is diffused with the menstual blood, and even sometimes protrudes from the vulva, in the form of a brownish, blastic, fluctuating tumour. Almost an immediate stop has been often put to alarming symptoms of long duration, by making an incision through the membrane causing the obstruction. A crucial wound will be sufficient, without cutting any of the membrane away; but we are recommended not to neglect to keep the newly divided parts affixed for a few days, by means of a tent, or a doff of lint.

Labours are sometimes so difficult, and attended with such injury, that inflammation, and even ulceration of the vagina, may be thus produced. These effects may be followed by considerable contractions of this canal, arising from the shrinking of the cicatrices. However, such a case is not what we have now to consider, our remarks being at present restricted to examples in which the vagina is altogether impervious.

The os tincæ may be entirely obliterated by congenital malformation, the effects of difficult labours, or any other circumstances producing inflammation in the part. In all these cases, menstruation and conception are rendered impossible, and a train of phenomena is observed, resembling those of the congenital imperforation of the vulva, and vagina. But the os tincæ may become clofed, from some accidental cause, subsequently to conception, and then the defect cannot be known until the period of delivery. In this last case, it is highly important to ascertain correctly whether the orifice of the womb is really obliterated; or whether an obliquity of that organ, or some other derangement of it, may not impede upon us?

The re-establishment of the natural opening is always indispensabie, and it is materially facilitated by the diffused state of the uterus. The operation can be most conveniently done, either with the instrument called a pharyngotomus, or a curved bistoury, which has a cutting edge that extends only a short distance from the point. See Delpech, Précis Élémentaire des Maladies reçus Chirurgicales, tom. i. p. 497, &c.

VAGINA, Prolapsus of, denotes, in Surgery, a species of bearing down, arising from a protrusion or defect of the vagina. The vagina is liable to two kinds of prolapsus. In one case, all its tunics are included in the protrusion, and at the same time that the part falls downwards, it becomes inverted. In the other example, it is only the relaxed lining of the vagina which descends and makes a protrusion.

The first species of prolapsus vaginae is subject to varieties. For instance, sometimes the whole circumference of the part falls down; sometimes only a portion of one of its sides. In the first event, the prolapsus forms a cylindrical tumour, which consists of all the coats of the vagina, presenting an opening at its lower termination, and having an external covering, which is composed of the internal lining.
of the vagina. But when the protrusion comprehends only a portion of one of the sides of this tube, the tumour occurs in the form of a cul-de-sac, which can be put back into the vagina with the finger or probe, and the lower end of which is without any aperture. The following differences are also remarkable in cases where the lining of the vagina constitutes the prolapsus. In some instances, the lining of the whole circumference of the part protrudes in the form of a cylindrical swelling, consisting of a duplicature of that coat. In other examples, the membrane lining the vagina is relaxed and elongated only at one or more particular points, and produces one or more external swellings of the cul-de-sac figure. This last case is liable to be mistaken for polypi of the vagina.

The possibility of a prolapsus of the whole of the vagina, together with all its coats, has been doubted by Sabatier and Levret; but, as Richter conceives, without any real foundation. If, as the latter author observes, it is possible for the inner coat of the vagina to separate from the external, with which it is intimately connected, an event which every body admits as happening in the second kind of prolapsus vagina, why should it be impossible for the whole of this tube, together with all its coats, to be separated from the surrounding parts, to which it is not so closely adherent? Sometimes the rectum, inclusive of all its coats, forms what is termed a prolapsus ani, and why may not the vagina be displaced in a similar manner, since it must be much more liable than the rectum to be propelled downwards in the violent straining which takes place during parturition? Richter asks, whether every prolapsus uteri is not accompanied with such a displacement of the vagina? Cases are upon record, where the prolapsus of the vagina happened all on a sudden, in consequence of falls, the starting of a horse, &c. (Hoin, Levret, Journal de Médecine, tom. xl.) Here it cannot be supposed, that the case was merely a protrusion of the inner coat, which can only be gradually relaxed and elongated. Lastly, instances in which the prolapsus of the vagina was several inches in length, have been gradually reduced by means of external pressure. (Hoin.) How can we imagine, says Richter, that such cases could proceed from any degree of relaxation, to which the membranous lining of the vagina is liable?

It must be acknowledged, however, that this species of prolapsus is much less common than the second kind; that when it occurs, it is generally as a consequence of a prolapsus of the uterus; and that it cannot easily happen at all, except about the time of delivery. A prolapsus of the inner coat principally occurs in married women who have had many children, and been frequently troubled with flux album. It has, however, been occasionally met with in young unmarried females. The prolapsus of one particular portion of the inner coat of the vagina, is generally the consequence of a hernia in this part; but sometimes in cases of droopy, a portion of the vagina, containing fluid, protrudes in the form of a cyst, or fac.

When the whole circumference of all the coats is involved in the prolapsus, if a finger, or probe, be introduced into the cylindrical tumour, which the vagina then forms, the os uteri will be found to be situated closely behind the external pudenda; for this fort of bearing down is always attended with a displacement of the womb, in the direction downwards. In many instances, particularly when the prolapsus has taken place suddenly, and is quite recent, the patient experiences a variety of complaints about the bladder and rectum, and the evacuation of the urine and faces becomes more or less interrupted. That the protrusion comprehends all the coats of the vagina, is frequently quite manifest from the thickness of the cylinder. Also, when the accident has occurred suddenly, or it can be easily reduced, there is always reason to conclude that the prolapsus is of the preceding description.

The prolapsus of the inner membrane of the vagina generally arises gradually, and often as a consequence of a long-continued fluor album. It either does not admit of reduction, or, if reduced, it lies in the vagina, and fills its cavity. It has very little effect upon the uterus itself, which usually remains in its natural position, and it seldom produces any difficulty in the evacuation of the urine and faces. When only a part of one side of the inner membrane of the vagina is relaxed, elongated, and protruded, the swelling can be pushed back into the vagina with the finger, and thus the nature of the complaint becomes manifest. The prolapsus, arising from a hernia in the vagina, can only be ascertained by attending to the symptoms which characterise this sort of rupture, and which are noticed in the article Hernia.

A prolapsus of all the coats of the vagina, while it is small and recent, can be reduced by pressure without difficulty. But the thing which demands the greatest care, is to hinder a relapse. This is accomplished by the employment of a pessary, and the use of astringent applications.

When, however, the last species of prolapsus has existed a long while, its reduction is more difficult; for the vagina, after it has remained displaced a certain time, begins to be affected with swelling and induration. According to the reports of Hoin and Levret, a large protrusion of this kind, ten inches in length, was so diminished by keeping the patient invariably confined upon her back, that in the course of a month the rest of the tumour admitted of being reduced. Indeed, as Richter observes, there can be little doubt, that the treatment which has been advised by some authors for the diminution of very old enormous omental ruptures, would here be equally applicable; viz. long confinement in bed upon the back, with the buttocks somewhat elevated; continued, well-directed, external pressure; a very low diet, and repeated mercurial purges. By such means, no doubt, the swelling might be in many instances sufficiently lessened to admit of reduction.

During the state of pregnancy, a prolapsus of the foregoing kind may be attended with considerable embarrassment, and even danger. In one case, where such a prolapsus, five inches in length, took place during labour, it became necessary to turn the child, and the displaced vagina was also lacerated. The woman, however, recovered. (Pietteh, Journal de Médecine, tom. xxxiv.) In another case, where the prolapsus became as large as a man's head at every return of the labour-pains, the practitioner succeeded in holding the parts back, while the woman was delivered with the aid of the forceps. (See Loder's Journal, i. p. 490.) When this is impracticable, it is necessary, according to Richter, to make an incision through both sides of the prolapsus; a proceeding, says he, to which the practitioner may the more readily make up his mind, inasmuch as the parts have even been lacerated, without any ill consequences, as we have already related.

The prolapsus of the inner membrane of the vagina, while small and recent, may perhaps be removed by astringent applications. When, however, it is of long standing, indurated, and of large size, much expectation of successe from this treatment cannot be entertained. Richter sees no reason why, in such a case, the redundant relaxed part should not be cut away, especially when the discharge is accompanied with ulceration, and other serious complaints. As he observes, there can be no doubt that a prolapsus of the inner membrane of the vagina, when limited to one part of this
this canal, may always be safely extirpated either with a
knife or a liguature. Richter's Anfanglgr. der Wundarzney-
kunst, b. 7. Vierte Kapitel.

VAGINE Femina Tinctor, in Anatomy, a name given by
Albinus to a muscle in the thigh, called by others the me-
embranous, and the muscle fuscis late; and by some musculus
APONEUROTICUS; which see.

VAGINE Utri Spinther. See Generation.

VAGINE Foliorum, in Botany and Vegetable Physiology,
the sheath of the leaves, (See LEAF and SHEATH,) most
peculiarly observable in grasses, and their allies, confiims
of that part of the leaf which is below the stipula, by which it
is crowned. The Vagina embraces the item, or fraw,
more or less closely. Its infide is usualiy quite smooth,
and polished, while the outside is generally ribbed, rough,
or hairy, though commonly less so than the leaf itself. The
pubescence in some infiinaces is directed contrariwise to
that of the leaf. In most grasses, particularly the corn tribe,
the sheaths of one or two of the uppermost leaves are much
dilated, serving the important purpose of protection to the
young panicle or spike of flowers. A singular theory re-
specting the cause of fmrit in grass was, many years since,
published by the Rev. Henry Bryant, of Heydon, Norfolk.
(See Smir.) The mischief was, by this writer, attributed
to an accidental tightness in the fummit of the sheath of the
leaf, by which the young ear was, in a manner, strangled;
an hypothesis totally insufficient to account for the pheno-
memon.

The term vagina is, in like manner, applied to the lower
part of the foliage of the Crocus, the Snow-drop, and
various f ilemif species related to one or the other, in which
the leaf tapers down into a sheath of eathing ftockfalt. But
it is erroneously exemplified by proferor Wildenow, in his
Principles of Botany, by the genus Polygonum, whose cy-
lindrical membrane, attached to the inner ride of each foot-
flalk, and surrounding the item above every joint, is a real
sheathing SFIPULA, fee that term; the ftockfalt being in-
terposed between it and the leaf. So in Spermacoce, and
other plants of the extenfive and various order of Rubiaceae,
the membranous intradulcous stipula must not be taken for
a vagina, though it be connected, ever fo closely, with the
footflalks at each side; because the analogy of molt plants
of that order shew it to be a real stipula, which from its
situation, and the varieties in its form, structure and aspect,
is of peculiar botanical importance.

VAGINALIS GUBA, in Anatomy, the mucous arca-
tum surrounding the mucous membrane of the æsophagus.
See DEGLUTITION.

VAGINALIS TETIS, the serous membrane surrounding the
tetflake, and forming the bag, in which it is included. There
is also a covering, composed of condensed cellular mem-
bane and the fibres of the cremaster, which surrounds the
permatic cord and the tettsis with its membranes. This
is called tunica vaginalis communis. See GENERATION.

VAGINALIS, in Ornithology, a genus of the order Gralle
of birds, of which there is one species, viz. the V. alba, or
white sheath-bill of Latham. Found in New Zealand, and
other islands of the Southern ocean.

VAGINARIA, in Botany, named from vagina, a
sheath; because the item is clothed with leaflets sheaths.
Pursh 58. This genus is adopted by Pursh from Perfoon,
and its distinctive character confines in the fact being sur-
rounded at the base with three scales, and three intermediate
bristles. One or the other of these parts doubtfuls origi-
nates in the three flaments. The flignas, moreover, are laid
to be three.

The only species mentioned by Pursh is V. Richardi.

(Virensa scirpoidea; Michaux Boreol.-Amer. v. 1. 35. (7.)
—"Stem leaflets, sheathed. Spike ovate, mostly foliary.
Scales lanceolate-fpatulate." —Native of inundated fields,
from Georgia to Florida. Perennial. Purf. The aspect of
the plant is like a Restio; see that article, Furena,
and Scirpus. When we advert to the many different ap-
pearances of these scales, or bristles, in different species of
the lat-mentioned genus, and even their absence in some, we
hesitate to admit the Vaginaria, without examining one
species at least, or being informed of any others on which it
is founded.

VAGIOW, in Geography, a town on the W. coast
of the island of Celebes.

VAGLIANO, a town of Italy, in Friuli; 10 miles
W. of Udina.

VAGNEY, a town of France, in the department of
the Voges; 4 miles E. of Remiremont.

VAGNIACIS, in Ancient Geography, a place of Great
Britain, marked in the 2d Iter of Antonine, between Novi-
ogamus, situated, according to Camden, Gale, and Horflcy,
at Woodcoke near Croydon and Durobrivae or Rochester;
and pupposed to be Northfleet.

VAGOS, in Geography, a town of Portugal, in the
province of Bisara, near the Atlantic coast; 6 miles S. of
Bragança Nova.

VAGRAM, a town of the archbishopric of Salzburg;
6 miles S. of Salzburg.

VAGRANTS, in Law. See VAGABOND.

VAGSKOI, Ust., in Geography, a town of Russia,
in the government of Archangel, at the union of the rivers
Vaga and Dwina; 20 miles N.N.W. of Schenkurk.

VAGUM, in Anatomy, a name given to the eight pair
of nerves of the medulla oblongata, called the par vagum,
because dispersed to divers parts of the body. See NERVOUS
System.

VAGUM, in Ancient Geography, a promontory situate, ac-
 accordance to Ptolomey, on the easter coast of the isle of
Corfica.

VAGUS, in Geography. See WAAG.

VAHALIS, or VACHALIS, Wahal, in Ancient Geography,
a name given to the left branch of the Rhine, after its sepa-
ration at its entrance into the country of the Batavi, which
afterwards joined the Meuse. The territory between these
rivers was denominated Insula Batavorum.

VAHAN, in Hindu Mythology, is the general name of
the different vehicles by which their gods and godesses are
carried. The godesses are usually seen accommodated with
the vehicles of their lords; being indeed, as is declared,
the fate. We will here notice such vehicles as are appro-
priated to the different deities. Brahma, being a personif-
cation of the earth, or matter, and remotely participant also
in representing humity, rides the semi-aquatic bird, the
flugifh swan or goose, called Hahna; his confont Sarawati,
godesses of harmony and arrangement, is sometimes seen
mounted on a species of heron. See SARASWATI and
SIVA.

Vifluna, the confrator, is the air; and he, like his bro-
other Jupiter of Greece, cleaves his own element on a tower-
ing eagle, which the Hindoes call by several names; among
them Garuda and Superna.

Siva, the changing or destroying power, is a personifi-
cation of fire; he also corresponds in character with some
of the Jupiters of the Weff, and rides a white bull, called
NAND. His faksi or confrout, Parvati, is often seen turret-
crowned, in a car drawn by tigers or lions. Virgil's de-
scription of Cybele applies equally to the mountain-godeffs
Parvati.

"Alma.
"Alma pares Idaca deum, cui Dindyma cordi, Turrigereque urbes, bijugique ad fratera leones."  
_En. x. 258._

Dryden changes her lions into tigers.

"Hear thou great mother of the deities, With turrets crowned, on Ida's holy hill, Fierce tigers reined and curbed obey thy will."

Pitt, however, in his invocation, restores the lions.

"Great guardian queen of Ida's hills and woods, Supreme, majestic mother of the gods! Whole strong defence proud tow ring cities share, While roaring lions whir thy mighty car."

In most languages of the East, it may be observed, the same word means both lion and tiger. The Greeks or Romans, borrowing the attribute from the East, may easily have misconceived its name. (See _Cyclebe and Parvati_.) It might be flown that most of the mythical ceremonies practiced by the Western heathens in honour of the goddesses Cybele, were, and are, common also in India in honour of Parvati. The peacock is likewise facred to the latter, and is, as we shall presently notice, the vahan of one of her family, Kartikya, otherwise called Komara; and the being deemed his fakli is called _Kaumari_, and is likewise fo conveyed.

Having thus seen that the vehicles of the three great powers compounding the Hindu triad are severally the fwan, the eagle, and the bull, we proceed to notice how the inferior deities are accommodated.

_Surya_, or the sun, rides sometimes a lion, but generally in a golden car drawn by seven horses, or by one horse with seven heads. The horse is sometimes called _Oechebros_ (which fee); but we are in some doubt if correctly. _Soma_, the moon, is drawn in his silver car (the moon is masculine in India) by an antelope. _Pavaka_, the god of fire, rides an ardent ram. _Kama_, the Indian Cupid, rides a luri, or parrot. _Varuna_, genius of the waters, borefrides a fish, as does also _Ganga_, the Ganges, primal goddes of rivers. _Ganeha_, the god of prudence and policy, has an elephant as his vahan, it being supposed the animal of greatfet forcethe: a rat is also deemed a very fagacious animal, and Ganeha is sometimes seen fo mounted. He is reputed the eldest son of Parvati, and is otherwise named _Pollar_; which fee. _Kartikya_, her second son, or rather her lord's son, is borne by a peacock, as before noticed. _Indra_, regent of the firmament, has a three-trunked elephant, named _Iravan_. _Vairava_, a son of Siva, rides a buffalo, sometimes a dog, _Vagyabathi_, and _Vrksadwaja_, are names of Parvati and Siva, meaning tiger-mounted, and one who rides a bull.

Astrologers have mounted the reft of the planets, as well as the sun and moon. _Mangala_, or Mars, on a horfe, sometimes on a ram: his fiery nature connects him sometimes with the igneous Pavaka, who rides the latter animal. _Bodha_, or Mercury, being by some accounts a manifestation of Vishnu, at any rate bearing the fame name with a disputted avatar or incarnation of that god, shares his vehicle, and the planet is mounted on an eagle. _Vrksaspati_, or Jupiter, on a boar. _Sukra_, or Venus, on a rat, sometimes on a camel. The slow-moving _Sani_, or Saturn, on the heavy elephant, or ill-omened raven. _Rahu_, the dragon's head, on a tortoise or owl: and _Ketu_, the tail or descending node, on a frog.

The word _vahan_ is usually pronounced as one broad syllable; and it has been surmised that the English _van_ and _vahin_ may bear some etymological affinity to it.

**VAHARA.** In Geography, a town of Arabia Deserta; 150 miles W. of Jamama.

**VAHINGEN.** See VAYHINGE.
coloured plates, not highly finished, but expressive and correct. The principal object of this work was, in the first instance, to illustrate Forskål's discoveries, very incorrectly displayed in his own posthumous Flora; and the materials for the exemplification of which are, it seems, but partially and imperfectly preferred. Vahl's Symbols are moreover enriched with descriptions and figures of new or rare plants, from various other sources. The communications of the author's numerous correspondents, particularly of Von Rohr and others from the Danish West Indian colonies, are added to the acquisitions of his own journeys; and the whole forms a large body of valuable practical information. His Eclips Americana, published in 1796, are a sequel to the Symbols, on the same plan, but devoted to American plants.

In 1809 and 1800 professor Vahl received the pecuniary support of the Danish government in a second tour to Holland and Paris, for botanical purposes; chiefly, we presume, with a view to the composition of a great work, long in his contemplation, on the model of the Linnaean Species Plantarum. Of this he just lived to publish the first volume, under the title of Enumeratio Plantarum, in 1804, in 8vo, including the classes Monandria and Diandria. The second, containing only the Triandria Monogyna, was published by his widow in 1805. The copious introduction of new species, the ample original descriptions, the well-chozen synonyms, and judicious remarks, render this work far superior to any other of its kind, giving it all the merit of an original performance. Besides the addition of the essential generic characters, as in the Systema Vegetabilis of Linnaeus, Vahl's Enumeratio is enriched with a copious description of the peculiar habit of each genus, after a plan first introduced by Gouan, in his Flora, as well as Hortus Montesefonis, and which Linneus justly commended, as leading the way to improvement in natural classification. Nor mutt we pass by, without commendation, the excellent generic and specific index to each volume, an appendage of whose value we are seldom duly sensible, but from its inaccuracy or omission in other inclusions. The neglect, or bad construction, of indexes, and the omission of references to pages, are defects of the modern French school, which may be avoided by any botanical writer, even of the most humble scientific pretensions, and which the most learned ought not to neglect. The sequel of professor Vahl's last publication, as far as concerns grasses, was reported to have been left by its author in considerable forwardness, and was, if we mistake not, announced for publication. Something to this effect is found in the preface to the second volume; but we know not that any part of these valuable materials has appeared. The botanical professorship at Copenhagen was conferred on Mr. Vahl, after his return from his second visit to France, but he lived not long to enjoy his well-merited fame and distinction. He died on the 24th of December, 1804, in the 54th year of his age, leaving a widow and six children. His library, herbarium, and manuscripts were purchased by the king of Denmark for 3000 dollars, about 675l, besides an annual pension of 400 dollars, or 90l, to his widow, and of 100 dollars to each of his children. It was intended that the above-mentioned manuscripts, including a finished treatise on the class dyngeina, should be edited by the successor of professor Vahl, Mr. Hornemann, to whom the continuation of the Flora Danica was likewise confided. We are not informed of the progress of either. Besides the botanical writings of professor Vahl, he has published some zoological papers in the Danish language, especially relating to birds; and has described a fifth, constituting a new genus, by the name of Holocentrus leaginognus, in the third volume of the Transactions of the Natural History Society of Copenhagen.—A more detailed review than we could here undertake, of the first volume of the Enumeratio Plantarum, may be seen in Sims and Konig's excellent Annals of Botany, v. 2. 179, where Mr. Konig has noticed every new article of information, and corrected every incidental mistake, with consummate accuracy and knowledge. We have already advanced an opinion similar to that of this able critic, respecting Vahl's removal of the Linnaean Sci- taminee, see that article, from the class Monandria to Gynandria; a measure barely to be excluded by our supposition, and not at all to be justified by any alleged reason.—Vahl's Works. Sims and Konig's Ann. of Bot. v. 1 and 2.
VAHLIA, in Botany, received that name from Thunberg, in honour of his contemporary professor Vahl. (See the last article.) The fame genus was originally defined by the great Linneus to commemorate Jean Jacques Roufeau, as appears by specimens in the Linnaean herbarium, marked Roufeana capensis; but he did not live to publish this genus, which his son, through inadvertence probably, introduced into the Supplementum Plantarum, by the name of Russellia, see that article and Rousseau. Those names being otherwise appropriated, the Vahlia is finally established. —Thunb. Nov. Gen. 36. Schreb. 176. Willd. Sp. Pl. v. 1354. Mart. Mill. Dict. v. 4. Juff. 318. Lamareck Illutr. t. 183. (Ruffelia; Linn. Suppl. 24. Murr. in Linn. Syst. Veg. ed. 14. 270.)—Clafs and order, Pentandria Dicygnia. Nat. Ord. Calycanthem., Linn. Onagre, Juff.

Gen. Ch. Col. Perianth superior, of five lanceolate, acute, concave, spreading, permanent leaves. Cor. Petals five, ovate, concave, spreading, undivided, not half so long as the calyx. Stam. Filaments five, inserted into the calyx, between the petals, and full as long as its leaves, thread-shaped, erect; anthers incumbent, oblong, with four furrows. Pf. Germen inferior, roundish; styles two; thread-shaped, thinly spreading, longer than the flaments; stigmas simple, obtuse. Peric. Capule ovate, abrupt, marked with five elevated lines, and crowned with the calyx, of one cell and two valves. Seeds numerous, minute.

Eif. Ch. Calyx of five leaves. Petals five, alternate with the flaments. Capule inferior, of one cell and two valves, crowned with the permanent calyx. Seeds numerous.

1. V. capensis. Cape flah. Thumb. Nov. Gen. 36, with a plate. Prod. 48. Willd. n. 1. (Ruffelia capensis; Linn. Suppl. 175.)—Gathered by Thunberg, in sandy ground, near the valley of Verkeerde, at the Cape of Good Hope, flowering in December. It has not yet been brought to England. The root is woody and perennial. Stems feveral, herbaceous, erect, a span or more in height, simple or branched, leaffy, clothed with short, soft, prominent, vivid pubescence, like all the rest of the herbage. Leaves opposite, feffile, linear-lanceolate, entire, pale green, an inch or inch and half long. Flowers yellow, in small, axillary, nearly feffile, tufts, about the upper part of the branches, accompanied by a small lanceolate bracteae. The petals and filaments assume a violet hue when dried.
VAHNI, in Mythology, a name of the Hindoo regent of fire, who is more commonly called Pusaka; which see. A similar name, usually indeed written Vani, is given to Sarawati, consort of Brahma. See SARA.WATI and MARUK.
VAIDYA, the name of a respectable class of Hindoos, who follow the profession of physic. Individuals of different religious sects are comprised in this denomination. (See SECTS OF HINDOOS.) Sir W. Jones, speaking of the Vaidyas, says, "they have more learning, with far less pride, than any of the Brahmas; they are usually poets, grammarians, rhetoricians, and moralists; and may be esteemed, in general, as the most virtuous and amiable of the Hindoos." (Aliatic
When town called little " reported a the Subhavati. consequence, a vols. Sante the 50 from the that r Geography, 1, He paradife a town between Nova Zembia, and the continent of Russia.

VAIGAL, in Geography, a town of Hindoozla, in Golconda; 25 miles S.S.E. of Combamet.

VAIGAR, an island of Russia, in the Frozen ocean, on the N. side of the straits of Vaigatskoi, about 24 miles in length, and about 8 broad. N. lat. 75° 30'. E. long. 52° 24'.

VAIGATSKOI, PROLIV, or Straits of Vaigats, between Nova Zembia, and the continent of Russia.

VAIGE', a town of France, in the department of the Mayenne; 12 miles E. of Laval.

VAIHEND, or Scanderie, a town of Perisia, in the province of Segestan, anciently Alexandria; 50 miles E. of Akrohage. N. lat. 31° 10'. E. long. 66° 40'.

VAI-HIO, in the Materia Medica, a name used by some authors for a kind of lignum aloes, which is brought from China, and is very black, and scented.

VAI'JAYANTA, the name of a palace of the Hindoo god Indra, situated in a celestial city named Amrohati. (See Indra.) Another of his abodes is called Sitanta, which see. See also VAiKONTHA.

VAIKONTHA, the paradise of the Hindoo god Vishnu. It doth not precisely appear whether this abode is celestial, terrestrial, or subterranean. Sometimes it is described as the latter fort in a sea of milk, called Kripamudra, where Vishnu is pictured reposeing on a mighty serpent-named Sesa, accompanied by his delightful companion Lakshmi. (See LAKSHMI and Sesa.) A commentator on a Sanscrit work entitled Khetra Nirmana, the most ancient perhaps of Hindoo geographical books, places Vaikontha in the Frozen ocean; a circumstance which would have afforded curious confirmation to an idea of Buffon and Baillic as to the seats of Eden, had these eminent men been aware of it: an idea more ancient, indeed, than the day of these philosophers, as Ptolemy had a similar notion. See Paradise.

Several of the Hindoo deities have residences especially alluded to them, by European writers usually called the paradise of those deities respectively; thus Indra's abode is called Sitanta, Swarga, and Vaijayanta; that of Siva, Kailasa; that of Varuna is Subhavati. Generally, these places or places of the Hindoo gods are described as situated on a mythical terraced hill named Meru, to which word we refer the reader for some of the extravaganzas connected with the Olympia of the Hindoos.

VAILYATA, in Geography, a town of Italy, in the department of the Adda; 18 miles E. of Milan.

VAIYALL, a town of France, in the department of the Lot; 15 miles N. of Cahors.

VAILLANT, Jean Fois, in Biography, an eminent antiquary and medallist, was born at Beauvais, in Picardy, in the year 1632. His maternal uncle, to whose care his education was entrusted, designed him for the profession of the law; but inheriting the fortune of this relation, he devoted himself to the study of physic, in which faculty he took a degree. Having accidentally gained possession of a box of medals, he relinquished his medical pursuits, applied to antiquarian and medallic pursuits, and soon formed a valuable cabinet, to the increase of which his various travels very much contributed. In one of his excursions for this purpose, he was attacked by an Algerine corsair and carried into slavery; and after his release, he was on another occasion attacked by a Tunisian; and in order to secure fifteen or twenty gold medals which he had in his possession, he swallowed them, and in process of time nature relieved him of his burden, which he disposed of to an amateur with advantage. On his return to Paris, he distinguished himself by various dissertations on medals. He was thus recommended to the court, and employed on a commission for the protection of the same object. His adoration urged him to visit Egypt and Persia, and he was recommissioned by obtaining a rich cargo of medals. To the Memoirs of the Academy of Inscriptions and Belles Lettres, of which he was a member, he communicated several valuable papers on his favourite subject: his reputation gained him the post of keeper of the duke of Maine's cabinet of medals: and even at Rome he was so highly esteemed, that he obtained a dispensation from the pope to marry successively two sisters. His private character was highly estimable. His labours were terminated by death in 1706, at the age of seventy-four years. The titles of some of his principal works, independently of several separate dissertations, tending to illustrate medallic science in its connection with history, are as follows: "Numismata Imperatorum Romanorum," 1674, 4to. of which an enlarged edition was published by Baldini at Rome in 3 vols. 4to. 1743: "Seleucidarum Imperium, five Historia Regum Syriae ad fidem Numismatum accommodata," 1681, 4to. : "Selecta Numismata antiqua ex museo Petri Seguini," 1684, 4to.: "Numismata Aere Imperatorum, Augustarum, et Caesarum in Colonia, Municipiis, et Urbibus, &c." 2 vols. fol. 1688: "Numismata Imperatorum, &c. Graecae," 1698, 4to.: "Historia Ptolemaei Regum aedem Numism. &c." 1725, 4to.: "Achzemenidarum Imperium, &c." 1725.

The son of the preceding, viz. John-Francis Fois-Vaillyant, born at Rome in 1665, was instructed by his father in medallic science, and was graduated for the profession of physic. He published several dissertations on medals in the Memoirs of the Academy of Inquisitions, of which he was a member, and also a dissertation on the "Di Cabiri." His life terminated in 1708, in the 44th year of his age. Moreri.

Vaillyant, Sebastian, a distinguished French botanist in the early part of the 18th century, was born May 26th, 1669, at Vigny, near Pontoise, being the eldest son of a shopkeeper in that town. He is described as having, like many other botanists of eminence, imbibed a taste for plants at a very early age, and even before his fifteenth year to have cultivated, in a little garden of his own, with which his father indulged him, all the plants he could collect from the country around, or from the gardens of his neighbours. We can hardly wonder that his illustrious biographer Boerhaave, should, as a physician, delight also to record an instance of Vaillyant's early medical talents, in curing himself clandestinely of an intermittent fever, with lettuces and vinegar. He is reported to have made a rapid proficiency at the grammar-school of Pontoise, where he gave extraordinary proofs of attention to study, as well as of attachment to practical botany. His father was anxious to have him instructed in music, in which he made such progress, that he was found competent, at the age of eleven years, to succeed his master, as organist in the Benedictine convent of St. Maclou, in the town above-mentioned. Soon afterwards, he obtained a similar appointment, in a neighbouring nunnery, where he was accommodated with board and lodging as a remuneration. The decided bent of young Vaillyant's mind appears to have been towards medicine and surgery, in consequence, probably, of his primary disposition to an observance of natural objects, and a consideration of the qualities of plants. Hence he was led to frequent the public hospital, and even to become an assistant to the surgeon of the house, and in his leisure hours he read medical books, and pursued anatomical enquiries. In this manner he palled his time till he reached his nineteenth year, when
when he removed to Evrues in Normandy, to place himself under another surgical teacher. Here he gained the good opinion of the marquis De Givole, captain of the royal fullifiers; who engaged M. Vaillant as surgeon to his company, with the rank of lieutenant. Thus the peaceable botanist, the organist of a nunnery, became a soldier; encountered the dangers of a campaign; came off with honour and safety; performed the last duties to his patron, who fell in the battle of Fleurus, July 1, 1690; and after visiting several towns in Flanders, returned to Evrues, which he quitted next year to pursue his studies, with more advantage, at Paris.

On the theatre of the metropolis, the talents of our young candidate for scientific distinction and improvement found every possible encouragement and advantage. Here, although the practice of surgery seems to have been his first object, probably with more direct views to a maintenance; he soon resigned every other pursuit for the first passion of his youth, and botany henceforth engaged all the faculties of his mind. He soon discovered the science to be just then in a flate to make the scientific fortune of a man of enterprise and genius. Botany had, for some time, become a leading topic among persons of rank and opulence, by which the materials for its improvement had accumulated, but the advancement of the science itself had not, by any means, kept pace, with its riches. Men of the first rank in human intellect, who had fixed everlasting landmarks in other departments of knowledge or literature, though they had done much in botany and other branches of natural history, had but imperfectly accomplished any great sylphematic plans of technical distribution or discrimination, without which mere practical knowledge is but an indigested chaos. The lucid order, and rapid perceptions, of Tournefort's mind, with whom Vaillant was now soon familiarized, as one of the most diligent of pupils, could not but strike him with peculiar force, while supplying light of which he so fenfibly felt the necessity. But as a lamp, however brilliant, serves to betray the surrounding darkness in an unlimited unexplored cavern; so the achievements of Tournefort, like those of his predecessors and contemporaries, tended as yet to display more of the arduous nature of their undertaking, than of its perfect accomplishment. The common herd of their pupils and admirers, are like the animalcules on a blue-bottle-fly; who, as a witty writer observes, "doublets think their fly the greatest and the blueb object in the universe," and they can only go where it pleases to lead. But Vaillant, though adoring the genius of Tournefort, and loving his truly amiable social qualities, could not but perceive the imperfect execution of much of his plan, and detected at once perhaps many of those faulty principles, which have gradually displaced themselves to subfequent observers.

That he had performed an Herculean task, could not be denied, but that much remained to be done, was but too evident to an acute observer. The great preceptor soon became aware of the talents of his pupil; he held him up as an example to his colleagues, and adopted him as a condutor in the elucidation of the plants about Paris.

After residing some time at Neuilly, Vaillant was chosen secretary to Father de Valois, a Jesuit, confessor to the younger branches of the royal family. Here he became known to M. Fagon, first physician to the king (see Fagon); who finding him investigating and arranging moffs, was much struck with the specific definitions, written in Vaillant's beautiful hand under each, as they still remain. Fagon soon afterwards took him under his immediate protection, promised to further his wishes of travelling, and invited him to reside at Paris, till he could procure him an appointment of that kind from the king. This object however was soon given up. Vaillant became secretary to his patron, and was taken into his house. Having free access to every part of the royal gardens, he enriched his own herbarium, and those of Fagon and Tournefort, with exotic, as well as native, specimens, which he prepared with skill and dexterity. He likewise added daily to the collection of living plants, and became, under M. Fagon, the director of the Jardin du Roi. At length, in 1708, this faithful and disinterested friend resigned, in favour of Vaillant, his own appointment, of professor and subdirector of plants in that garden, which Tournefort had repeatedly solicited from him in vain. To this great benefit, which Vaillant was anxious, by all possible exertions, to deserve, was added the construction of new and ample hot-houses, at the wish of the new professor, and the formation of a splendid cabinet of Materia Medica. His lectures on botany, and especially a "discourse on the structure of flowers," since published, were received with great applause. He was admitted, without solicitation, into the Academie des Sciences; it is even said that he was defirous of declining this honour, which his friends had great difficulty in persuading him to accept. A piece of self-denial, or excellece modestly, the reasons for which are not very apparent.

In the intervals of his other occupations, Vaillant visited, at different times, various parts of France, for the sake of botanical enquiries; but it does not appear that, except his martial expedition into Flanders, he ever extended his travels beyond the limits of his native country. His foreign correspondence, nevertheless, was very extensive, and by this means he greatly augmented the riches of the royal garden.

Notwithstanding Vaillant's original admiration of Tournefort, and his personal intimacy with that great and amiable man, of whom we have given an account in its proper place; he very soon, as we have already hinted, became dissatisfied with some of the fundamental principles of his preceptor. He adopted and clearly explained the fexes of plants, and consequently asserted the importance of the flaments and pistils, in a physiological as well as sylphematic point of view. This was the subject of his discourse above-mentioned, delivered June 10th, 1717, before his pupils at the Jardin du Roi. On the 15th of December, 1721, he read a professed criticism on the method of Tournefort, before the Academy of Sciences, printed in the Memoirs of that learned society for 1723. We regret to find, in both these performances, much difrepeftful mention of his illustrious predecessor; which has been but too severely retaliated upon himself, by the neglect which his own just pretensions have received from his countrymen. To have been more in the right than Tournefort, was of itself a sufficient offence; and to have asserted his opinion with asperity and indecorum, served only to authorize part of the hostility which he incurred. Whatever progresses Vaillant had made towards the foundation of a new system of classification, he did not live to lay it in any regular form, before the public. His active life was devoted to the acquisition of materials, which he had no opportunity of employing. His difficulties, doublets, increased with his progres. What parts did perfet are admirably done; particularly his elaborate exposition of the genera and species of the syngenous, or compound flowers, published in the Memoirs of the Academy, between the years 1718 and 1722. But the observations and enquiries of this great botanist had been extended to various other classes and families of plants, though they never ripened into any complete sylphematic work. The writer of the present article has long ago recorded, Tr. of Linn. Soc.
v. 1. 24, that the herbarium of Vaillant, preferred at Paris, displays astonishing instances of his profound knowledge and acute judgment, with respect to the genera, species, and synonyms of plants. The specimens are copious and fine, especially of Tournefort’s oriental plants, which are far more perfect and abundant than in that author’s own collection. These were obtained by Vaillant, either from Gun- delheimer, the travelling companion of Tournefort, or from others who subsequently pursued the same track. We know not that any competition, or open controversy, arose between these distinguished men, during Tournefort’s life, who dedicated a genus to his pupil. (See *Valantia.*) Vaillant is reported to have critically examined the whole of the *Institutiones Rerum Herbariae*, as soon as that great work appeared, in 1702, and to have communicated his remarks to M. Fagon. This intelligent friend declared, that though in the morning he had admired the performance of Tournefort, he could not withhold his approbation of Vaillant’s remarks by the light of mid-day. Tournefort died in 1708, and Vaillant’s first public attack, except what might incidentally fall from him in lecturing, was made, as we have said, in 1721. We are informed thus much of the principles and aims of Vaillant, that, having established the doctrine of the sex of plants, he proposed to distinguish his clavyses by the parts of the flower, and his genera by characters taken indirectly from the whole plant, according as might best suit his purpose. In this latter respect, he was but returning towards the dogmas of former ages, and we can have nothing to regret. His boldest and most meritorious attempt respected nomenclature. He wished to distinguish every genus by an expressive name, by which its essential characters might at once declare themselves. He flattered himself with extending the fame principle to every species of plant, so that a word or two might give its name and character together. The learned reader will be aware of the similarity of this scheme to that of Rivinus, and of its failure, even on the very limited theatre of that writer’s scientific operations. (See *Rivinus.*) He will also recollect that it succeeded with Linnaeus, only because the latter had the good fortune, or good sense, after discovering that these two objects, of nomenclature and clear discrimination, were in themselves incompatible, to reconcile both by division.

While these pursuits engaged the mind of Vaillant, his bodily constitution was yielding to the fatigues he had too long imposed upon it. Exposure to cold and wet, and to the night air, in many of his botanical rambles, did but ill suit a delicate frame, prone to pulmonary diseases. In proportion as he perceived a decay of strength, he only exerted himself the more, to complete the undertakings which had been the object of his life, and which might have demanded something like a patriarchal term of existence. He suffered for about four years under a consumptive attack, in the course of which he expected little hard concretions, amounting, says Boerhaave, to above 400, and at length expired, in a tranquil manner, on his birthday, May 26th, 1722, aged fifty-three. He was tall, well-proportioned, and active; of an open and generous disposition, hating flattery, and militefulness even of his due praise. The character of his criticisms upon Tournefort is rather, as we should hope, to be attributed to blunt sincerity, than to any portion of jealousy or envy, of which his conduct in other instances, betrays no traces. He had the satisfaction of soothing, by the most affiduous care, the sufferings of his friend Fagon, who underwent an operation for the stone at a very advanced age; and who would gratefully have ceded to Vaillant, as a recompense, the profits of an import which he enjoyed upon mineral waters. This Vaillant had the still higher gratification and honour of declining.

His rich and splendid herbarium, comprehending that of M. Fagon, which had been given him by the son of his old friend, as well as his own cabinet of various natural curiosities besides, were purchased by the king, Louis XV., and deposited in the museum at the Jardin du Roi, where they have fortunately remained in safety amid the wreck and the restoration of a kingdom. His library was left in the hands of his widow, whose name was Françoise Nicole Boffonet. Vaillant married this lady on the 14th of October, 1701, and enjoyed with her twenty-one years of great conjugal happiness, but had no offspring.

The greatest object of temporal concern, on his death-bed, was a work on the plants around Paris, which he had long been preparing, and for which Claude Aubriet, the inimitable botanical draughtsman of that day, had made, under the inspection of the author, above 300 drawings. Anxious that his labours should not prove altogether fruitless, Vaillant wrote, a year before his decease, to the famous Boerhaave, requesting him to take this orphan work under his protection. To this request, backed by their mutual friend William Sherard, Boerhaave readily acceded. Vaillant declared that he had particular and very strong reasons, which he could not explain, for making this request. He probably feared that his countrymen, venerated of Tournefort, who no longer stood in their way, might not be over-anxious to preserve the relics of his rival, whose fame and activity had so lately eluded with their own. Whatever were his feelings on this subject, Vaillant was satisfied with Boerhaave’s acceptance of this trust, and awaited his long-expected change with the piety and composure becoming a Christian and a true philosopher.

Boerhaave published the work of his departed friend in 1727, under the title of *Botanicon Parisiense*, making a very handsome folio volume, with thirty-three admirable plates, comprehending above 300 figures, of rare or obscure species, in which the cryptogamic plants are very abundant. The flowers alone of all the Orchis tribe are exhibited; their herbage being so nearly uniform as to be deemed less necessary. These figures, though uncoloured, leave scarcely any thing to be desired. The arrangement of the work is alphabetical, and its language, except the specific definitions, French, like all the author’s compositions. The elegancies of style, or refinements of language, do not seem to have made a part of his studies, and he was rather a scientific than a learned botanist, except what was necessary for the accurate appropriation of synonyms, in which no one, so far as we have traced his progress, was superior to Vaillant. Dillenius, a professed and elaborate botanical critic, was undoubtedly, by many degrees, below him. Certain imperfections of this popular work, justly indicated by Haller, arose, as he observes, from Boerhaave’s inability to bestow sufficient time on the correction of the unfinished manuscripts. Hence many repetitions occur, and some of the figures want references. Following authors have generally cited the beautiful figures, without advertising to the text; in which, notwithstanding, much may be found worthy of notice, especially all the practical observations, and original descriptions, of Vaillant himself. We cannot too strongly commend him as a botanist of originality, acuteness and accuracy, who has contributed to the general stock of botanical knowledge, and whose genius, had he lived longer, might have greatly extended the limits of philosophical speculation, on the subject of arrangement.—*Vaillant’s Works,* and his life by Boerhaave. *Haller Bibl. Bot.*

**VAILLY,** in *Geography,* a town of France, in the department
Vair, in Heraldry, a kind of fur, or doubling, consisting of divers little pieces, argent and azure, resembling a Dutch U, or a bell-glas.

Vairs have their point azure opposite to their point argent, and the base argent to the azure.

When there are only two or three vairs, the ancient heralds call it great vair; and when there are more, small vair.

Vair is intended to represent a kind of skin, used anciently by the kings of France, in lieu of a fur, and with which the gowns of the prelates à mortier, the counsellors of the court, the heralds' coats, &c. were lined till the fifteenth century.

It was properly the skin of a kind of squirrel, called also in French vair, and in Latin frivus; which was white underneath, and of dove-colour at top. It is described by Aldrovandus under the name of servio vario, and is the same, according to Gefsner, with the mus Penticus of Aristotle and Pliny; which the Latins call varus or varius, from the variety of its colour. Its two skins, joined together, make the figure of the vairs in armories; being naturally white and azure.

Vair, Colombiere observes, is the second sort of fur anciently used as a lining of the garments of great men, consisting of little pieces, fewed by the barbers on white skins: and because these pieces were usually blue, those who first settled the rules of heraldry, decreed, that this fur, in its natural azure, should always be argent and azure. So, if it be absolutely said, such a family bears vair; it is supposed to be argent and azure.

Regularly there must be but four rows or ranks of vair in the shield; if there be either more or less, the number must be specified. The smallest number, being three rows, is called bessoy de vair; the most, being five or six, is called menu, or small vair.

The bessoy is also known by the first figure on the dexter side of the escutcheon being always of metal, and in form of a belt; whereas that of menu vair is in shape of a glass.

Vair, Counter. See Counter-Vair.

Vajra, the name of the weapon placed in the hand of the Hindoo god Indra, regent of the firmament, and of atmospheric phenomena. It is in fact lightning, or the thunder-bolt or fulmen of the western Jove. Indra is hence named Vajrapani, or "grasper of the thunder." (See Indra.) It is usually described as a discus or quoit, with a central hole, on which it is whirled round on the forefinger of the right hand, and sent whirling with a terrible effect. This is similar to the chakra, or circle, the common attribute of the god Vishnu. (See Vishnu.) Such things are now seen in the hands of holy mendicants variously called Saniyas and Yogi. (See Sects of Hindoos, and Yogis.) They are usually a foot or less in diameter, of metal or hard wood, sharp at the edge. In pictures, fire is sometimes flaming from its periphery, as if from the vehemence of its centrifugal energy. The only representation we ever saw differing from this description, is in the frontispiece to Kirkpatrick's account of Nepal. The god Siva, sometimes appearing in the character of the thunderer, is named Vajreswara, which is: it means riding on the thunder.

Vairaca, in Geography, a town of France, in the department of the Loire; 4 miles N.E. of Martel.

Vairava, in Mythology, a name of the Hindoo god Siva. It is sometimes written and pronounced Bhairava; and, derived from Bheru, means the tremendous. The Maharratas extensively worship Siva under this name, which in their mouths is corrupted into Bheroba. They have legends relating to an avatar or incarnation of Siva under this name and form; and images are very common of him in the Maharrata country. Other accounts make Vairava and Virabadra the offspring of Siva, and give the former name likewise to Parvati, when speaking of her in her terrific characters, such as Kali; which see. Sometimes all the offspring of Siva are denominated the Bhairavas. See Virabadra.

The Maharratas assign to Bheroba a comfort or fakti, whom they name Jogafry; it would perhaps be more correctly written Tugafri. In the Hindoo Pantheon several representations are given of this couple, and the author of that work says that he has in his collection nearly a hundred metallic casts of them, mostly rude and old, with an appearance of having been buried. The figures are usually accompanied by Sivean attributes, such as the trisula or trident, the pata or cup, the linga, &c. (See Trisula, &c.) Sometimes he rides a buffalo. See Vaiyan.

There are fables in Hindoo legends of Brahma having had one of his heads cut off. This decapitation is by some accounts attributed to Vifnu, or Narayana, by others to Siva and to Vairava, and the latter is in pictures sometimes represented holding the ghastly head, and a cup or pata to receive the blood; with a collar of blanched skulls, and attended by a dog. Sometimes he, usually four-handed, and his wife, are represented as skeletons.

The sect who exclusively, or especially adore Siva, are called Saiva. It appears that this sect has spread to Java; for an image of him has been recognized in the interior of the island, and a well-executed drawing of it is in the possession of Mr. Marfden, author of the Malayan Grammar and Dictionary. Batu-Bharave is the name under which this tremendous pair are known in Java; where, as Mr. Marfden is informed, our officers, during the late service, frequently recognized Hindoo figures, especially of Polleor, to which they had been familiarly accustomed on the continent of India. See Polleor.

Sommeret notices this deity as honoured in the Carnatic: he calls him Vairevert, third son of Siva, produced from his breath to humble the arrogance of Brahma, one of whose heads he wrenched off, and used the skull to receive the blood of his other antagonists. He is described as mounted on a dog.

Vaire, in Geography, a river of France, which runs into the Var, about 3 miles N.W. of Glandevens.

Vajreswara, in Mythology, a name of the Hindoo god Siva, derived, it is said, from the weapon more usually given to Indra, called Vajra, meaning lightning or thunder. Siva under this name will therefore correspond with the Jupiter fulminator or tonans of the West. Siva's companion, Parvati, is furnamed Vajreswari, pronounced sometimes Bajreswari; the initials being so extensively interchangeable.

Vairoxe, in Geography. See Vaire.

Vairaye, Vaire, Ferry, or Varry, is applied to a coat, or the bearings of a coat, when charged, or chequered, with vair.

When the colours are argent and azure, or white and blue, it is vairer proper: if it be otherwise, the colours are to be expressly named; vair of such a colour or metal. He bears vairye, or, and vert; this is particularly called vair compos'd. The bearings are likewise said to be vairy, when they are charged with vairs. When their chiefs, crofles, pales, fetles, &c. happen to be vairy, the number of ranks are to be specified.

Vairy gowns are observed, by Julius Pollux, to have been
the habit of the ancient Gauls, as ermines were of the Armenians.

VAIRY-cuppy, or Vairy-taffy, or Potent-counter, Counter-potent, is a bearing in heraldry, composed of pieces representing the tops of crutches, or potents counter-placed. In blazon, the colours must be expressed; as azure, argent, &c.

VAISSETTE, Joseph, in Biography, a native of Guillin, in the diocese of Alby, was born in 1685, and entered among the Benedictines of St. Maur, at Toulouse. In 1713 he settled at Paris, and engaged, in concurrence with Claude de Vio, of the fame fraternity, in the history of Langueoc, of which the first volume appeared in 1750, in folio; and upon the death of his coadjutor in 1734, it was continued by himself, four more volumes having been published, and a fifth being in preparation at the time of his own death. This history is highly commended, on account of both the learning and moderation displayed by the author. An abridgment of this history, in 6 vols. 12mo., was published by Vaiette in 1740; and he was also the author of an "Universal Geography," in 4 vols. 4to., and 12 vols. 12mo., 1755, which at the time of its publication was generally approved. The author's erudition was extensive, and his disposition amiable, so that he died, much regretted, in 1756. Moreri.

VAISNAVAD, the general name of all the different sects of Hindoos who worship Vishnu, either directly or indirectly, through his comfort Lakshmi, or in one of his incarnations called avatars. In the article SECTS OF HINDOOS, we have concentrated the chief of what we have to offer on the subject of the numerous individuals comprehended under the denomination of Vairahava; which, in its most extended sense, includes considerably more than half of the whole race of Hindoos. The distinction of Saiva, or Siva-Bakht, comprehends the other portion. See SAI.

The second plate of the Hindoo Pantheon contains many sectular marks, or symbols, by which the different sects distinguish themselves: generally speaking, horizontal lines on the forehead mark the Saiva, while perpendicular forehead indicates some fect of Vairahava. These lines are red, white, or yellow, with different coloured spots over, under, or between them; all of which are said to have some mythological allusion.

VAISNAVAD, in Hindoo Mythology, is a name of the goddes Lakshmi, the comfort or energy of Vishnu; as such, she is called his faksi. In the different incarnations of Vishnu, Lakshmi accompanied him, either under her own name, or under some other denomination.

VAISHISHIKI, in Philosophy, is the name of one of the six Hindoo schools, or systems. Under the article PHILOSOPHY OF THE HINDOOS, we have enumerated the principal schools of that thinking race. The Vaisshika is a division of the Nyaya, and we refer to the latter word for some notice of the doctrines of its followers.

VAISON, in Geography, a town of France, in the department of the Aude, on the Gave de Pau; before the French revolution the fee of a bishop, suffragan of Avignon; the old town has been long in ruins; 22 miles N.N.E. of Avignon.

VAISRAVA, in Mythology, a name of the Hindoo Pluto, who is more commonly called Kubera; which signifies, in the Sanscrit, their father, and they are then named Vaivraava.

VAISSEUX ENFILE, a term used by the French writers in Chemistry, for the vessels used in distilling in an open fire, or in sand, which do not consist in the common way of a retort, joined immediately to a receiver, but have a receiver with a double opening, and a neck at each end, placed between the retort and the ordinary receiver. The neck of the retort is let into one of the necks of this middle vessel, and its other neck is thrust into that of the receiver; by this means the receiver, into which the liquor is to fall, stands at a greater distance than otherwise would from the fire, and the vapours are more easily condensed in it by its coldness, while they have also a double or treble space to expand in, and by that means are not so likely to burst the vessel.

VAIVASVAT, in Mythology, a name of Surya, the Hindoo regent of the sun, as noticed in the article SURYA, where he is under this name styled, on the authority of sir William Joades, "Lancer of the golden ray." The very important deity Surya is frequently called in Hindoo books by the title of Vaivasha; and those personages who, like the ancient Incas of Peru, are pretended to be of solar origin, are called Vaivaswata. In the Gita, Krishna says, "This immutable system of devotion I revealed to Vaivasha, (or, says the commentator, the sun,)" Vaivasha declared it to his son Menu; Menu explained it, &c. This Menu is the author of the celebrated Institutes that bear his name; he is also named Satyavara, and is reasonably believed to be the same with the Noah of Scripture. (See Menu and SATYAVARTA.) These offspring of the sun are likewise called Suryavasa; which fee: and some farther notice of their curious coincidence with the solar race of Peruvians will be found in our articles RAMA and SITA. The Hindoo Pluto is sometimes called Vaivaswata Yama; denoting, we conclude, his solar origin.

VAKES, in Geography, a town of Arabia, in the province of Nedshe; 100 miles N. of Jamama.

VAKIA, in Commerce, a weight in Persia and Arabia. At Bafiorah, the weights for merchandise are, the maund attary, the maund seyf, and the oka of Bagdat. The maund attary contains 25 vakias tary (sometimes reckoned at 24 or 26 vakias), and weighs 283 lbs. avoirdupois, or the vakia 19 ounces. The maund seyf, or maund Bagiorah, contains 24 vakias seyf (called okaes of Bagiorah), equal to 76 vakias tary, or 90 lbs. oz. avoirdupois. The oka of Bagiorah is 2½ vakias tary, or 47¼ Oz. avoirdupois. In sales of ginger, pepper, and coffee, 26 vakias are allowed to the maund; in sales of cardamoms, fugar-candy, and benzoine, 25 vakias per maund; and in sales of sugar and metals, 25 vakias per maund. The vakia tary, which should be about 115 mifals (the mical weighing about 72 English grains), varies from 110 to 118, and the others in proportion.

At Betlefagni, or Betlefackee, in Arabia, a rattle of coffee contains 14½ vakias, and a farcel, or farzil, of the same, 290 vakias; of dates, candles, and iron, 16 vakias are reckoned to a rattle; of all other sorts of goods, 15 vakias make a rattle. At Mocha, gold and silver are weighed by the vakia of 10 cofals, or 160 carats: 24 carats = a mical, and 1½ vakia = a beak = 100 Spanish dollars weigh 87 vakias, so that a vakia weighs little more than 1 oz. English troy weight, the bahar contains 15 farzils, or 150 maunds; the maund = 40 vakias. A rattle is = 15 vakias, but in coffee, 14½ vakias are reckoned for a rattle, 2 rattles for a maund, and 10 maunds, or 290 vakias, for a farzil. Kelly's Univ. Cambilt.

VAKUNAIKA, in Geography, a river of Russia, which runs into the Kifenga, N. lat. 56° 16', E. long. 88° 14'.

VAL, in Geography, a town of France, in the department of Mont Blanc; 20 miles E. of Montlief.

VAL
VAL, Le, a town of France, in the department of the Var; 3 miles N. of Brignoles.

VAL di Comparato. See Teka.

VAL de Morea, a town of Spain, in the province of Leon; 12 miles E. of Ponferrada.

VAL de Prades, a town of Portugal, in the province of Tras os Montes; 16 miles E.N.E. of Mirandela.

VAL Ribi, or VAL di Ribey, a town of France, in the department of the Calvados; 12 miles N.W. of Caen.

VAL Rotando, a town of Naples, in Lavora; 15 miles S.E. of Sora.

VAL de Salas, a town of Spain, in Galicia; 22 miles S. of Orense.

VAL de Santiago, a town of Portugal, in the province of Alentejo; 27 miles S.W. of Beja.

VAL de Travers, a district of the principality of Neuchâtel, about 18 miles in circumference, and containing about 3500 inhabitants. It is situated between Neuchâtel and Pontarlier.

VAL di Tramopia, a valley of Italy, in the Brescian, containing 19 parishes, and about 13,000 inhabitants, chiefly employed in the manufacture of iron.

VAL di Vara, a town of Spain, in the kingdom of Seville; 10 miles from Lucena.

VAL de Us, a town of Spain, in the province of Valencia; 17 miles S.E. of Segorbe.

VALA, in Ancient Geography, a town of the interior of Thrace. Ptolemy.—Alfo, a town of Africa, in Mauritania Tingitana. Ptol.

VALADARES, in Geography, a town of Portugal, in the province of Entre Ducro e Minho; 5 miles S.W. of Melgafa.

VALAGODE, a town of the island of Ceylon; 60 miles S. of Candy.

VALAIS, or VALLAIS, an independent republic in alliance with the thirteen cantons of Switzerland, and which has formed a particular league with the seven Catholic cantons, for the defence of their religion. This tract of country stretches from E. to W. about 100 miles, and contains 100,000 inhabitants, professing the Roman Catholic religion. It is divided into Upper and Lower Valais; the former reaching from the Furca to the Morge, below Sion, which is its capital; and the latter, from that river to St. Gingou, situated upon the lake of Geneva. From the mountain of Furca, its eastern boundary, two vast ranges of alps incline the Valais: the southern chain separates it from the Milaneze, Piedmont, and part of Savoy; the northern from the canton of Bern. These two chains, in their various windings, form several small valleys, watered by numerous torrents that rush into the Rhone, as it traverses the whole district, from the Furca to St. Maurice. A country thus entirely inclosed with high alps, and consisting of plains, elevated valleys, and lofty mountains, may be naturally supposed to exhibit a great variety of situations, climates, and productions. Accordingly, the Valais prefers to the curious traveller a quick succession of prospects, as beautiful as diversified. Vineyards, rich pastures covered with cattle, corn, flax, fruit-trees, and forests, occasionally bordered by naked rocks, crowned with everlasting snow.

The productions of the Valais vary according to the great diversity of climates by which this country is distinguished. It supplies more than sufficient wine and corn for interior consumption, and exports a considerable quantity of both; the soil in the midland and lower districts being exceedingly rich and fertile. In the plain, where the heat is collected and confined between the mountains, the harvest is usually finished in July; whereas, in the more elevated parts, barley is the only grain that can be cultivated with any success, and the crop is seldom cut before November. About Sion, the fig, the melon, and all the other fruits of Italy, come to perfection. In consequence of this singular variety of climate, the traveller in the same day may indulge himself with strawberries, cherries, plums, pears, and grapes, each of which is the natural growth of the country.

Both the hills and valleys of the Valais breed cattle in abundance, and yield plenty of game. The mountains are suffused to contain lead, copper, and silver mines; but the produce, it is supposed, would not defray the expense of working them. Here is likewise pit-coal. The Valais is noted for two hot-baths of celebrated virtue, as those of Brug, or Gleuf, and Leuck, the latter of which is commonly known by the appellation of the Vallais bath. In the upper tythings the prevailing language is the German, but the inhabitants of Sion, in the Upper Valais, with all in the Lower, speak a corrupt French; though in both parts, especially in the chief burg, they apply themselves to the German, French, Italian, and Latin; being all indifferently necessary to them in their intercourse with the cantons of Bern and Uri, Savoy, Piedmont, and the Milaneze; therefore a stranger cannot but be surprized at the fluency with which the most ignorant people here speak those four tongues.

The ancient inhabitants of this country were the Lepantii, Viberi, with the Seduni and Veragri, who fold their liberty dear to Sergius Galba, general of Julius Caesar. In the middle ages it came to be called Vahlia, and in 1032, under the emperor Conrad II., devolved to the German empire, as a part of the second Burgundian kingdom. In the year 1035, that prince made over the Lower Valais to the counts of Savoy. The inhabitants of the Upper Valais refusably maintained their liberties, as well against the dukes of Zaringen, who, in the year 1157, were by Frederic I. appointed guardians of the bishoppry of Sion; as against the bishops of that see, who assumed the title of counts of the Valais, and after that drove out the families of the barons Tour and Raren, who had usurped a dangerous authority among them. In 1475, the bishop of Geneva fell on the Upper Valais with a body of 18,000 men, confining the Lower Valsiens and Savoyards; but the Upper Valsiens, being affiend with 3000 troops by Bern, Friburg, and Solothurn, their allies, defeated the bishop, and even made a conquest of the Lower Valais, which ever since that time has been subject to them. In the same year, also, they formed a perpetual alliance with Bern, which was renewed in 1643, and in 1529, with the whole Helvetic body. In 1533 they entered into a more particular union with the seven popish cantons.

At an early period of the French revolution, the disaffected party of the Lower Valais appealed to France to emancipate their country from their subjection to the Upper Valais, but the French not having matured their scheme of fraternalization, their petition was rejected.

In February 1798, however, the people of the Lower Valais were enfranchised, and admitted to an equality of rights by the Upper Valais; but after the conquest of Bern, and the revolution of the greater part of Switzerland, the inhabitants of the Upper Valais rejected the new constitution, took up arms, and defended themselves with great spirit. After several bloody defeats, and the capture of the castle of Sion, which was formed by the French, the natives submitted, and both districts were moulded into one department, called the Valais.

There are no manufactures of any consequence; and indeed the general ignorance of the people is no less remarkable.
able than their indolence; so that they may be considered, in regard to knowledge and improvements, as some centuries behind the Swis, who are an enlightened nation. The peasants seldom endeavour to meliorate those lands where the soil is originally bad, or to draw the most advantage from those which are uncommonly fertile: having few wants, and being satisfied with the spontaneous gifts of nature, they enjoy her blessings without much considering in what manner to improve them.

The Upper Vallais is sovereign of the Lower Vallais, and comprises seven independent dixains, or commonwealths; namely Sion, Goms, Brig, Vifp, Leuck, Karen, and Siders; of these, Sion is arithotactical, and the others democratical. They are called dixains, because the Upper Vallais being divided into seven, and the Lower into three districts, each division is a dixain, or tenth of the whole.

The bishop of Sion was formerly absolute sovereign over the greater part of the Vallais; but his authority is at present limited to a few particulars. He has the sole power of pardoning criminals, and signs the warrants for executions; the money is coined in his name, and with the arms of the republic. In his acts he styles himself bishop of Sion, prince of the German empire, and count and prefect of the Vallais: in days of high ceremony he dines in public, and is waited upon by the first noble of the Vallais, who is hereditary treasurer. He nominates also the bailifs or governors of the two bailiffages of Martigny and Arden, and poises considerable influence from his patronage of church prerogatives. Upon a vacancy in the see, the canons of the chapter of Sion present from their own body four candidates, one of whom is appointed bishop by the landfrah, or general diet.

The seven dixains form, conjointly with the bishop, the republic of the Vallais, and all affairs are transacted in the diet, called landfrah, which meets twice every year at Sion. This assembly consists of nine voices; the bishop; the lands-hauptmann, who is chosen or confirmed by the diet every two years; and the seven communities. The bishop presides; the lands-hauptmann collects the votes; and all resolutions are decided by the majority. Each dixain, although it has but one vote, sends as many deputies as it pleases; they generally consist of four; a judge, a banneret, a captain, and a lieutenant. The judge and the lieutenant are appointed every two years: the two others hold their offices for life.

In all civil causes of a certain importance, an appeal lies from the inferior courts of justice to the diet in the last resort. Thus, by the institution of this supreme council, the communities in this country are firmly united, and form in conjunction one body politic, or republic, for the general affairs of the nation. In other cases, each of the commonwealths is governed by its own particular laws and customs.

Both the Upper and Lower Vallais were formerly dependent upon the bishop of Sion; but the inhabitants of the two districts united in order to limit his power; and, having succeeded, quarreled for superiority. A bloody war ensued; which terminated in 1475, by the total defeat of the Lower Vallais. Since that period, they have continued subject to the Upper Vallais, with the enjoyment, however, of some considerable privileges.

The inhabitants are generally of low stature, and those of that part of the Vallais in which the capital (see Sion) is situated, are very subject to goiters, or large excrescences in the neck, which frequently increase to an enormous size, and what is more extraordinary, idiocy is no leas prevalent. The weather in this inclined vale is exceedingly sultry and oppressive. This languid heat is probably one of the causes which occasion the inconceivable indolence of the inhabitants: much, however, must at the same time be attributed to the richness of the soil, which precludes the necessity of labour by almost spontaneously producing the fruits of the earth. In fact, the people affect nature very little; they suffer the vines in the vineyards to trail upon the ground; whereas, if the branches were properly supported, the owner would be well rewarded by the superior quality and quality of the produce.

The uncleanness of the common people is disgusting beyond expression. Although the Lower Vallais exhibits much uncleanness, its natives are not altogether so indolent as those of Sion and its environs. This imputation of indolence will not hold good with respect to all the inhabitants of the Upper Vallais; for in the eastern part of that district, the soil, though far inferior, was much better cultivated, and the people tended industriously. Some physical reasons may be assigned for this difference; for there the weather is not so sultry, the water is not unwholesome, the air remarkably salubrious, and none of those goitrous pernicious or idiots were observed common in the midland parts. See MArtigny and St. Maurice.

VALANTIA, in Botany, was originally so named by Tournefort, in honour of his pupil Sebastian Vaillant, see that article. The latter, as Linnaeus remarks, was diffatisfied with this appropriation, and wished, on that account, to set aside all names of botanists, as applied to genera, because he perceived the Valantia of Tournefort not to be distinct from Crucia, the name of a famous author. He was too correct; but there have been several species referred since to Valantia, which appear to constitute a good genus, whose limits the writer of this has attempted to define, in the Flora Graeca and its Prodomus, and which will here be exemplified—"Tourn. in Mem. de l'Acad. des Sc. for 1706. t. 3." Sm. Fl. Gr. T. 2. v. 28. Prodr. v. 1. 95. Linn. Gen. 543. Schreb. 728. Willd. Sp. Pl. v. 4. 947. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 434. Dill. Gen. 147. t. 8. Mich. Gen. t. 7. Juss. 179. Lamarck Illuir. t. 843. (Galium hifpidum; Gern. t. 24.)—Clais and order, Tetrandria Monogyenia. (Polygama Monoeoca; Linn.) Nat. Ord. Stellate, Linn. Rubiacceae, Juss.

Gen. Ch. Cal. Perianth none. Common Receptacle threeflowered, variously shaped, enlarged after flowering, containing the follicular fruit. Cor. superior, of one petal, flat; that of the central flower with four, of the lateral, or male, ones with three, deep ovate segments. Stam. Filaments in the central flower four, in the lateral ones three, thread-shaped, curved, alternate with the segments, and half as long; anthers roundish, of two cells. Pyr. germinal follicular, inferior, concealed in the receptacle, belonging to the central flower, with the rudiments of two seeds; hyle in the central flower only, deeply divided, scarcely fo long as the flaments; fligmas obsolete. Peric. formed of the enlarged permanent receptacle, gibbous, inflated, of one cell. Seed generally follicular, sometimes two, ovate, concealed in the receptacle, smooth.


Obf. The above limitation of the genus before us excludes V. pedemontana, Willd. n. 4; bunifolia, Willd. n. 6; taurica and cernifera, Willd. n. 9 and 10; with V. Aperina, articulata, Crucia and globula, of Linnaeus, all which eight species belong, if we mistake not, to Galium. Willdenow has already properly removed from this genus V. hypoparca, which is, as Browne and Pursh make it, a species of Rubia, very remarkable, however, for its apparently superior.
VAL

V R I I rior german. But we apprehend that what looks like an inferior calyx, may be four bracteae, and that this species, like Rubia tinctorum, may have no real perianth.

1. V. muralis. Wall Crofts-wort. Linn. Sp. Pl. 1490. Wild. n. 1. Ait. n. 1. Sm. Fl. Grac. Sibth. v. 2. 28. t. 137. (V. annua quadrifida verticillata, floribus ex viridi pallecentibus, fructu echinato; Mich. Gen. 13. t. 7. Crucia nova romana minima muralis; Colonna. Ecphr. 298. t. 297. f. 2. Rubia quadrifolia, verticillata femene; Bauh. Hist. v. 3. 718.)—Fruit lobed; its angles fringed with teeth. Whorls crowded.—Native of walls and dry banks in Italy and the south of France, as well as in Greece. Dr. Sibthorpe gathered it on Mount Hymettus, near Athens, and on the hills of the country of Argos. The root is small and annual. Stems several, about a finger's length, ascending, clothed with numerous whorls of small, obovate, entire leaves, four in a whorl, a little hairy on each side. Flowers axillary, one to each leaf, small, sessile, pale yellow. Fruit of a singular appearance, much larger than the flowers, deflexed; gibbous and smooth at the base, lodging a solitary, ovate, smooth seed; its lobes divaricated and toothed.

2. V. bifida. Briffly Crofts-wort. Linn. Sp. Pl. 1490. Wild. n. 2. Ait. n. 2. Sm. Fl. Grac. Sibth. v. 2. 29. t. 138.—Fruit brittle. Whorls rather remote.—Native of the south of Europe. Dr. Sibthorpe gathered it on the mountains of Crete, and has supplied the only figure that exists of this species. An annual herb, twice the size of the foregoing, and differing from it by its longer, narrower, more diffusely-leaved leaves; but more effantly by the oblong form of its common receptacle, or fruit, becket with pale rigid bristles, and not fringed, in which gibbous smooth base is lodged a solitary seed, whole infructescence erroneously represented by Gartner. Miller cultivated both these species, but nothing can be less likely to interest a mere flower-garden botanist. To those who study natural genera, and their affinities, these plants are highly curious, and sufficiently demonstrateValantia to be distinct from Galiana.

3. V. filiformis. Leaflet Crofts-wort. Ait. n. 3. Wild. n. 3.—Fruit cylindrical, falcifer, without prickles, longer than its falc. Leaves lanceolate, somewhat fringed. Gathered by Mr. Maillon, in Teneriffe. Root annual. Stems simple, a span long, bifid. Leaves four in each whorl, somewhat falcated, reticulated with veins; the lower ones rounded. Common receptacle becket with minute, lanceolate, chaffy scales.

4. V. Culcatoria. Hooded Crofts-wort. Linn. Sp. Pl. 1491. Amoen. Acad. v. 4. 296. Wild. n. 5. Ait. n. 5. (Cuculatoria; Buxb. Cent. 1. 13. t. 19. f. 2.)—Bracteae ovate, falcated, delixed, concealing the oblong furred hairy fruit.—Gathered by Buxbaum, in Cappadocia, and by Hafellquitt in Arabia, on hills, flowering in May. A small, branching, annual herb, with square rough-edged stems. Leaves ovate, falcated, revolute, rough with minute prickles. Flowers very small, yellowish, on bracted axillary stalks, each stalk bearing three flowers, and as many large, pale, reticulated, smooth, overshadowing bracteae, which well mark this species, and caused Buxbaum to distinguish it as a genus, by the name of Culcatoria. The plant is, however, a true Valantia.

VALARSA-KERD, in Geography, a town of Turkish Armenia; 15 miles W. of Diadin.

VALAY, a small island near the west coast of North Uist. N. lat. 57° 37'. W. long. 7° 29'.

VALBAS, a town of Spain, in Old Castile; 15 miles W.S.W. of Burgos.

VALCA, a river of the Pedi, which runs into the Tiber, about 5 miles above Rome.

VALCALDE, or Villa Calde, a town of the Genoese republic; 10 miles N. of Genoa.

VALKENBURG, a town of Holland; 3 miles N.W. of Leyden.

VALKENSTEIN, a town of the duchy of Wurzburg; 5 miles N. of Gerolzhofen.

VALCOUR. See Walcourt.

VALDAGNO, a town of Italy, in the Vicentia; 17 miles W. of Vicenza.

VALDA, or VADAY, a town of Ruffia, in the government of Novgorod; 72 miles S.E. of Novgorod. N. lat. 57° 50'. E. long. 35° 44'.

VALDARACETE, a town of Spain, in New Castile; 22 miles S.E. of Madrid.

VALDASNES, a town of Portugal, in the province of Tras os Montes; 9 miles E.S.E. of Miranda.

VALDAY, or Valday, a town of Russia; in the government of Novgorod, which are crost in travelling from Petersburg to Moscow, and are probably a continuation of the Lapland mountains. They were known to the ancient geographers by the name of Mons Alumnus. At present they are indifferently called Vhifokaya Plofchade, high rising ground, or the mountains of Valday, from the town and the lake Valdach, which are situated on their summits. The country about Valday, being the highest point of the mountain, is extremely pleasant. Fine, flow-rising hills, a charming pellicid lake, with an island on which stands a noble monastery, delightful groves, and an extensive fenery, form the most pleasing variety. These mountains afford numerous and large blocks of granite, quartz, and sandstone, together with felspar, hornblende, mica, felspar, porphyry, jasper and silex. The granite blocks are covered with sand and clay. The Valday eminence, which is the highest ridge of these mountains, shapés its courfe from the north, and appears to take its departure from between the lakes Ladoga and Onega. It then stretches across the Mita, runs between the Iemen lake and the Seliger, and extends its foot as far as into the governments of Smolensk, Orel, and Novgorod-Sewerki. About its western, southern, and eastern declivities, are several strong lirata of chalk and marl, which in farther progress are lost in marshy and fandy plains. Some naturalists are of opinion, that the whole of this Valday chain of mountains is the effect of violent inundations, and that it entirely consists of a chalk-like rime from crumbled and defroyed marine productions. But it is no lefs probable, that the middle part is a primitive mountain, having granite for its principal stratum, which, through a long interval of time, and perhaps under water, is so much decayed as to be in a manner smoothed. No chalk-pit has yet been opened on its summit. Upon the whole it is suppos'd, that all these elevations may be an original mountain decayed and defroyed on its surface, on which, round about its declivities, the loofe chalk and marl are floated and deposited. Among these mountains no mine has yet been explored. Some specimens have been obtained of copper and lead; but here is plenty of iron and slate. The extreme elevation of the Valday mountains is very moderate, as the highest point is scarcely 200 fathoms above the level of St. Petersburg. Besides the Valday lakes, there are others of inferior note; and at the western foot is the great lake Ilmen, at the southern, the Seliger, &c. Of the rivers, some spring from the mountains, and others are supplied by the lakes that lie at their feet; such are the Volga, the Duna, the Volkof, the Lovat, the Pola, the Tihagredo, the Kolp, the Dnieper, the Don, the Oka, &c. These mountains are sparingly
sparingly clothed with forests, but so much the more with beautiful meadows and fields, so that the graziers derive from them considerable profit. The species of wood are the several sorts of pines and firs, the birch, the linden, the alpen, the elder, &c. The soil in the valleys mostly consists of clay and marl, and is generally fertile. Tooke’s View of the Russian Empire, vol. i.

VALDEBURON, a town of Spain, in the province of Leon; 34 miles N.N.E. of Leon.

VALDECONA, a town of Spain, in Catalonia, on the borders of Valencia; 15 miles S. of Tortosa.

VALDEMANZANAS, a town of Spain, in the province of Leon; 8 miles S.W. of Alorqa.

VALDEMORO, a town of Spain, in New Castile; 13 miles S. of Madrid.—Alfo, a town of Spain, in New Castile; 18 miles E.N.E. of Ceneca.

VALDENSES, in Ecclesiastical History. See VAUSSOIS.

VALDEPENAS, in Geography, a town of Spain, in the province of Jaen; 8 miles S.W. of Jaen.—Alfo, a town of Spain, in New Castile; 22 miles S.E. of Ciudad Real.

VALDERAS, a town of Spain, in the province of Leon; 23 miles S. of Leon.

VALDERIES, a town of France, in the department of the Tarn; 6 miles N.N.E. of Alby.

VALDES, John, in Biography, a Spanish reformation and a lawyer, was knighted by Charles V. During a tour in Germany he imbibed the principles of Luther; and afterwards settling in Italy, and chiefly at Naples, he became secretary to the king. During his abode in this city, he communicated his sentiments to several persons, and particularly to Peter Martyr and Ochino. But though in his religious sentiments he concurred with the reformers, and in his notions with respect to the Trinity with those that were denominated Unitarians, he does not appear to have formed any separation from the church of Rome. His discourses, however, were numerous, and attracted the notice of the Inquisition; the dread of which induced several of them to quit the country, and others to retract their opinions. Valdes died at Naples about the year 1540, with an established character for piety and virtue, and leaving several works, particularly “Commentaries on various parts of the New Testament, &c.” Some of which have been inserted in the Index of the Inquisition, and others confiscated by the reformers. Beza condemns his treatise entitled “Considerations,” charging it with being the source of the errors of Ochino. Bayle.

VALDEZIA, in Botany, a genus in the Flora Pedemontana, page 57, so named in memory of Don Antonio Valdez, a Spaniard, minister of the Spanish marine, founder of a botanical garden. De Thésis.

VALDÍA. See OVIEDA.

VALDIGEM, in Geography, a town of Portugal, in the province of Beira, near the Duero; 3 miles N.E. of Lamego.

VALDIVIA, a river of Chili, which runs into the South Pacific ocean, near Valdivia.

VALDIVIA. See BALDIVIA.

VALDORE, a town of Hindoostan, in the Carnatic; 8 miles W.N.W. of Pondicherry.

VALDORF, or WALDORF, a town of Welfphalia, in the county of Ravenberg; 3 miles S.W. of Bielefeld.

VALDROMO, a town of France, in the department of the Drôme; 18 miles S.S.E. of Dieu.

VALDU, or WALDU, Peter, in Biography, was the son of a rich merchant of Lyons, who lived in the twelfth century, and derived his name from Vaux in Dauphiné, the place of his nativity. With a mind deeply impressed by the sudden death of a friend, he directed his views entirely to another world, distributed his wealth in alms, and employed himself in propagating just sentiments, as he conceived them to be, of true religion. From another account of this reformer we learn, that about the year 1160, he employed a priest in translating the four gospels from Latin into French, and by the perusal of them adopted opinions very different from those of the Romish church. In 1180, connecting himself with a small society of sentiments similar to his own, he assumed the character of a public preacher. Attempts were made to seduce him, but they proved ineffectual; and the number of his followers gradually increased. Expelled from Lyons, he retired to the mountains of Dauphiné and Savoy, and propagated his opinions, which were eagerly adopted by the multitude through the adjacent valleys, where they took deep root, so that no persecution or violence could eradicate them. From him, as some say, sprung the sect of the Waldenses. For other particulars, we refer to the article VAUSSOIS.

VALE or a Pump, at Seca, a term for the trough by which the water runs from the pump along the ship’s sides, to the scupper-holes.

VALE or Valley Lands, in Agriculture, are terms applied to any of those which lie in low, narrow, hollow tracts or depressions between hills or rising grounds on their different sides. They are, for the most part, applicable in a more particular manner to grasses and dairy practices than others, but sometimes, when suitably dry, to those of the arable kind. They are in many cases very quick in vegetation, and extremely productive; being readily capable of improvements by warping, watering, and other such means, at but little expense, which should always be well attended to, in all such lands where there is the possibility of effecting them.

The latter is likewise a term sometimes applied to a gutter or channel in a road or other such situation.

VALEDEA, in Geography, a sea-port town of Africa, in the kingdom of Fez, situated on the coast of the Atlantic, in a fliny plain; here is a very spacious natural baflon, surrounded by rocks, capable of containing above 1000 ships; but the entrance, which is entirely open to the west, is extremely difficult and dangerous. The coast is lined with rocks near 30 feet in height, which anciently must have been washed by the sea, the Moors living in the caverns hollowed out by the water. At the bottom of the rocks, the sands heaped up by time have formed a plain, laid out into gardens and cultivated: the town is little more than a circle of walls, containing but few inhabitants; 27 miles S.S.W. of Mazedan.

VALEGAR, a town of Hindoostan, in Coimbatore; 15 miles W. of Damiecte.

VALEGGIO, or VALEZZO, a town of Italy, in the department of the Benaco, on the river Mincio; 14 miles S.W. of Verona.

VALEGIO, a town of Italy, in the department of the Gogna; 4 miles N.E. of Lumello.

VALENÇA, a town of Portugal, in the province of Entre Duero e Minho, on the S. side of the Minho, opposite Tuy in Spain, and said to have been founded by the soldiers of Viriatus. It contains two parih-churches, an hospital, two convents, and about 900 inhabitants; 16 miles W. of Oporto. N. lat. 42°. W. long. 8° 20’.

VALENÇA de Alcantara, a town of Spain, in Estremadura, on the borders of Portugal; 24 miles S.W. of Alcantara.

VALENÇA de Duero, a town of Portugal, in the province
of Boira, situated about half a league from the Duero; 12 miles W. of St. Joao de Pefqueira.

VALENCIA, a town of France, and principal place of a district, in the department of the Lot and Garonne; 12 miles S.W. of Agen. N. lat. 44° 6'. E. long. 0° 59'.—

Alfo, a city of France, and capital of the department of the Drôme, on the left side of the Rhöne; anciently a Roman colony, called Julia Augusta. Before the revolution it was the fee of a bishop, and capital of a principality called Valentinois. An university was brought hither from Grenoble in the year 1453; 16½ pôts N. of Avignon. 

VALENCIA, a town of France, in the department of the Tarn; 12 miles N.E. of Alby.

VALENCIA, a province of Spain, bounded on the N. by Aragon and Catalonia, on the E. and S.E. by the Mediterranean, on the S.W. by Murcia, and on the W. by New Cañille, about 220 miles in length from N. to S.; the breadth is unequal, from 20 to 45. Valencia is, in proportion to its extent, one of the best peopled provinces of Spain, and contains few cities: has four sea-ports, the most considerable of which is that of Alican; the soil is extremely fertile, although divided by mountains. These contain mines of finopica, or blood-stone, iron, and alum. There are also found quarries of marble, jasper, plater, laps calaminaris, and potter's-clay, of which different kinds of earthen vessels are made. The climate is mild and pleasant, but there is something enervating and faintish in the air; vegetables with the finest outward show imaginable are not good to the table. No women work in the fields; but this may proceed from their constant employment within doors, as much as from any remains of Moorish jealousy, though the Valencians still retain much of the features and manners of their old Saracen masters. To this day the farmers will not allow their wives to fit at table, but make them stand at their elbow and wait upon them. The inhabitants of this province are said to have more of the silken and full-puffed manners of the old Spaniards, and to have adopted less of foreign improvements in civilization, than most other parts of Spain. This kingdom and city were conquered by the Moors under Abdallah Iis, and recovered in 1094, when the famous Cid Ruy Dias de Vivar, taking advantage of the confusion and civil war that raged in Valencia, after the murder of Sultan Hiyas, made himself master of the city by storm, at the head of a chosen band of valiant knights. This was the last exploit of that hero, so long the terror of the Muffulens. A few days after his death, the king of Cañille, finding it too far distant from his other dominions to be conveniently foguced in cafe of a sudden attack, thought proper to withdraw his troops, and suffer the Moors to repose themselves of it. It was again taken from them by James I., king of Aragon, in the year 1238, and for ever united to that crown, the fate of which it has ever-since followed through all its various revolutions. In the beginning of the reign of Charles V. this province was distracted by civil commotions and struggles between the nobility and commons. The population of the whole kingdom of Valencia amounts to 79,221 vecinos, or 716,884 souls, resident in 570 towns and villages. The manufactures of silk are the cause of a population that may be reckoned considerable, if compared with that of other provinces of Spain. The produce of this article, on an average of one year with another, amounts to about 500,000 pounds, worth a doubloon per pound, in the country. Government has prohibited the exportation of Valencia raw silk, in order to lay in a stock to keep the artificers constantly employed in bad years; for it has sometimes happened, that half the workmen have been idle for want of materials. The great nurseries of mulberry plants in the plains of Valencia are produced from seed, obtained by running a rope of Esparto over heaps of ripe mulberries, and then burying the rope two inches under ground. As the young plants come up, they are drawn and transplanted. The trees, which are all of the white kind, are afterwards set out in rows in the fields, and pruned every second year; in Murcia only every third year; and in Granada never. The Granada silk is esteemed the best of all, and the trees are all of the black sort of mulberry. The fruit exported from Valencia to the N. of Europe may be estimated, communis annis, at two millions of pesos, about 3,344,000 ½ sterling. The annual crop of hemp may be worth 300,000 pesos, at three pesos per arroba, 140,000 loads of rice, at 10 pesos a load, make 7,000,000 pesos. The vintage of 1767 produced 4,300,000 meafures of wine, which, at three reals a measure, come to 861,133 pesos. There is also much cotton made in this province from the cotton-plant, which rife to the height of three feet at molt, and very much resembles the raspberry-bush. They make in good years 450,000 arrobas, worth 1,350,000 pesos, and in middling years 285,000 arrobas. Notwithstanding all this abundance, nothing can be more wretched than the Valencia sheep-farming, who can with difficulty procure food to keep their families from starving. Valencia is watered by 35 rivers, all of which run towards the E. It was formerly inhabited by the Celtiberians, the Turdetani, the Lusonis, &c. &c. Valencia was erected into a kingdom, in the year 788, by Abdalla, governor of Valencia, who revolted from the king of Cordova, but was however obliged to pay an annual tribute of 17,000 maravedis. This kingdom continued till the 13th century, when the last king, Zaben, was dispossessed of his capital, and compelled to leave his dominions with 50,000 Moors.

VALENCIA, a city of Spain, and capital of the province so called. Its ancient name is unknown; but it is said to have been taken and fortified by Scipio, destroyed by Pompey, and rebuilt by Cesar. It was taken from the Romans by the Goths, and from the latter by the Moors, who twice possessed it 230 years; for it was taken in 1094, by the famous Cid Ruy Diaz de Vivar, and, during four years, the name of Valenciana. The Moors retok it, but it was finally conquered in 1238, by the king Don Jayme, and embellished as well as enlarged by Don Pedro IV. king of Aragon. It is about half a league in circumference, and the walls are built for ornament rather than defence. Mariana the historian says, that in Valencia cheerfulness enters at the doors and windows: the description he gives of this city is in many respects devoid of truth, and such that the author proves himself more a poet than an historian. Several geographers who have had implicit faith in Mariana, have even exaggerated his account of Valencia, and said the houses here are all palaces, on which account the name of Bella was given to the city, an epithet difficult to reconcile with narrow, crooked, and unpaved streets, impassable after rain; and in which there are but two or three houses built with talle, and a few churches distinguished by their architecture. It is the see of an archbishop, and an univerfity, instituted in the year 1470. Here is a tribunal of inquisition, with a royal audience, in which the governor, the captain-general of the province, and a royal regent, preside. The number of inhabitants is estimated at 100,000, but perhaps 80,000, or between both, is nearer the truth; 170 miles N.E. of Madrid. N. lat. 39° 27'. W. long. 0° 27'.

Accounts are kept at Valencia in libras of 20 soldi, or 240 ducros; also in reals of new plate of 24 ducros. The libra of Valencia is equal to the peso of plate, or

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or dollar of exchange; it is, therefore, worth 8 reals of old plate, 10 reals of new plate, or 15 reals 2 maravedis reals. The real of Plata Valenciana, 13/1 of which make a libra, is worth 1½ fueldos, or 18 ducers, that is, 2½ths of a real of new plate. The libra is worth 39½d. Railing nearly; or, more accurately, 1/12 railing = 6 libras, 1 fueldos, 5 ducers of Valencia. A carga or carica weighs 3 quintals, or 12 arrobas; the arroba, 24 lbs. pecho grueso, or 36 lbs. pecho fitile: the former pound is 18 oz. the latter 12 oz.; and the ounce is 1/4 heavier than the Castilian ounce; hence 50 lbs. pecho grueso, or 75 lbs. pecho fitile, answer nearly to 55 lbs. avoirdupois. The fitile, or lighter weight, is used for bread, sugar, tobacco, and spices; the grueso, or heavier weight, for most kinds of merchandise.

Corn is measured by the cahiz of 12 barfellas, or 48 caleones; 100 cahizes produce 5½ English quarters. The cantera, or arroba, liquid measure, contains 4 azumbres; and 25 such arrobas = 88 English wine gallons nearly. The carga of wine consists of 15 arrobas; the carga of oil of 12 arrobas. The vara or ell is divided into 4 palmos, and is about 4½th longer than the Castilian vara, measuring, therefore, 36½ English inches. Kelly’s Un. Camb.

Valencia, a town of South America, in the government of the Caraccas; 16 miles S.W. of Caraccas. This city was founded in 1555, under the government of Villacinda, with a view of establishing a port near to Caraccas, in order to facilitate the conquest of the country, which had been much extended by Faxardo. But Alonzo Dias Moreno preferred a situation farther distant from the lake Tacarigua, now Valencia, or half a league W. of it on a beautiful plain, where the air was pure and the soil fertile. N. lat. 10° 9’. W. long. from Paris 70° 45’. Its population in 1801 consisted of 65,487 persons, according to some reports, but according to others, said to be more accurate, of 80,000 souls. The inhabitants are generally Creoles, and the issue of very ancient families, excepting some from the Canaries, and very few Biscayans. The streets are wide, and for the most part paved. The houses are built like those of Caraccas, but not with stone. There is one church tolerably well built, and in the eastern part of a beautiful square, from which it receives, and to which it gives an embellishment, that constitutes the principal decoration of the city. In 1804 another church was erected, and dedicated to our Lady of la Chandeleur. The Franciscans have a monastery, occupied by eight monks, which has a very neat and elegant church. The inhabitants had formerly the character of being the most indolent in the whole province; but in consequence of some vigorous measures that have been lately adopted, a spirit of greater activity and industry has been excited among them. The situation of Valencia is particularly favorable for trade; being separated by only ten leagues of good road from Porto Cavolette, it may transport its commodities thither to a small expense; and besides, every commodity from the interior of the country shipped at Porto Cavolette goes through Valencia, and that which is destined for Guayaquil passes through Caraccas. The adjacent country produces every sort of provision and fruit in the greatest abundance, and of a most exquisite flavor; and its plains furnish its markets, at a very low price, with every kind of animal which they can consume. Depon’s Travels in South America, vol. ii.

Valencia, Lake of, called by the Indians Tacarigua, but different from the bay or lake of the same name, (see Tacarigua,) a lake of the government of Caraccas, less extensive but more useful than that of Maracaibo. This lake stretches 13½ leagues from E.N.E. to W.S.W., and its greatest breadth is four leagues. Its form is oblong; it lies at the distance of one league from Valencia, and is situated in a valley surrounded with mountains, excepting on the W. where it extends into the interior of the country. It receives the water of twenty rivers without any visible outlet. It is five leagues from the sea, and separated from it by inaccessible mountains. It probably discharges itself by a subterraneous passage, as well as by evaporation, so beneficial to vegetation. Its eastern part is appropriated to the cultivation of tobacco for the king’s benefit; and this tract being divided into five plantations, employs 15,000 persons. The remainder of the land gained from the lake is laid out in other kinds of culture. Its vicinity is enriched by a variety of birds, whose plumage is beautiful, and whose notes are melodious. It also abounds with aquatic game, and its borders are embellished with unending verdure. It is intercepted with a number of small islands, which are inhabited; and one of them, called Carayapona, contains a population sufficient to raise provisions, fruits, and vegetables for market. It furnishes a great quantity of fish, that called by the Spaniards, guayana, being the most abundant. Many reptiles are seen upon its borders; and among these are two kinds of lizards, which are particularly distinguished; and of which the Indians and some Spaniards make their most delectable meals. Depon’s Travels, vol. i.

Valenciennes, a city of France, and principal place of a district, in the department of the North, situated on the Scheldt, which runs through the town in several places, and here becomes navigable. It is supposed to have derived its name from the emperor Valentinian I., who, taken with the temperature of the climate, and charming situation of the place, laid the foundation of a town, about the year 367, endowing it with many privileges and immunities, and particularly of being an asylum for debtors and criminals. This privilege, which extended over the greater part of the town, was called “banlieue;” but it has since been limited, to prevent abuse from fraudulent bankrupts and affiants. Before the revolution, it belonged to Hainaut, and contained several churches and convents. The town-house is an ancient building of free-stone, founded in the 14th century; the square or grand place is handsome, but the streets are in general narrow, dark, and crooked. The form of its municipal government was considered so good as to serve for the model of several republics, particularly Venice and Nuremberg, which sent deputies to collect the laws. Near the town is a coal-mine. Valenciennes was one of the first towns which revolted against Philip II. king of Spain; it took part with the States and the Protestant religion, and refused to receive a garrison sent by Margaret of Parma; in consequence of which it was besieged, in the year 1567, by John de Noircames, baron of Selles, and at the end of three months surrendered at discretion; thirty-six of the principal ringleaders were punished, and the town deprived of its privileges. It was afterwards several times taken and retaken by the duke of Alva and the States General. In the year 1656, it was besieged by the French, under the command of marshals Turenne and La Ferté; but they were compelled to raise the siege, after the loss of 4,000 men killed and wounded, in several assaults. In the year 1677, it was besieged by Louis XIV., in person; and after 17 days, taken by assault. It remained to France by the peace of Nimeguen, which happened in the following year, when a new and handiwork citadel was built, at the expense of the citizens, and other fortifications added. In 1793, Valenciennes was invaded by the allies, under the conduct of the duke of York, and the governor Ferrand summoned to surrender. On the 14th of June, the trenches were opened. The British commander then summoned the
but receiving an unsatisfactory answer, the artillery began to play upon the town with great vigour, and in the course of the night above 500 red-hot balls were poured upon it. Towards the beginning of July, the besiegers were able to bring 200 pieces of heavy artillery to play without intermission on the town, and the greater part of it was reduced to ashes. The mortal sickly fact in the history of this siege is, that a considerable part of the was carried on underground, mines and counter-mines innumerable having been formed both by the besiegers and besieged. The principal of these, on the side of the former, were one under the glacis, and one under the horn-work of the fortres; these mines were completed and charged on the 25th of July, and in the night between nine and ten o'clock were sprung with the molten complete success. The English and Austrians immediately embraced the opportunity to throw themselves into the covered way, of which they made themselves masters. The die was now cast, and on the 26th the duke of York again summoned the place, which surrendered on capitulation the succeeding day; the duke of York taking possession of it in behalf of the emperor of Germany. The following year, however, in consequence of the success of the French arms, Valenciennes surrendered to the republicans, by capitulation, on the 26th of August. The garrison were made prisoners of war, but to be conducted to the first post of the imperial and Dutch armies, on condition that they were not to serve against the republic till regularly exchanged. Considerable stores of every kind, with 200 pieces of cannon, 1,000,000 pounds of gunpowder, and 3,000,000 florins in specie, and 6,500,000 livres, were found in Valenciennes; 100 head of horned cattle, and great quantities of oats and other corn, were also included within the fortresses. So earnest indeed had the emperor been to retain this important place, that he is said to have expended 3,000,000l. in repairing and improving the fortifications. What is the most to be lamented is, that upwards of 1000 unhappy emigrants were surrendered on this occasion to the vengeance of their enraged countrymen. The principal manufactures are lace, cambric, and woollen mitts, camlets, &c.; 4½ posts E. of Douay. N. lat. 50° 21′. E. long. 3° 36′.

VALENGIN, or VALENGIN, or VALENGIN, a town and capital of a lordship, in the county of Neufchâtel; 3 miles N.N.W. of Neufchâtel. See Neufchâtel.

VALENS, FLAVIUS, in Biography, a Roman emperor, was born at Cibalis in Pannonia, and associated in the empire with his brother Valentinian A.D. 364, at the age of thirty-six. To him his brother, to whom he was much attached, affixed the eastern portion of the Roman dominions, comprehending the whole of Asia, with Egypt and Thrace: upon this division, Valens made Constantinople the seat of his empire. Alarmd by the movements of the Persians on the borders of his territory, he departed for Syria, and at Caesarea, in Cappadocia, he was informed that Procopius had taken possession of his capital. The emperor was so terrified by this intelligence, that he intended to negotiate with the usurper, and to propose to him an abdication of the empire. His ministers, however, advised him to detach a body of troops, in order to suppress the insurrection at its commencement; but these troops joined Procopius, and contributed to his success. At length many of the insurgents abandoned their commander, who rendered himself unpopular by his rapacity and tyranny, and he was ultimately betrayed to Valens, who ordered him to be beheaded. The emperor was thus establisht on the throne; but his conduct was such as to cool the ardour of his friends, and to excite enmity and opposition. In process of time, from the year 366 to 369, he contended successfully with the Goths, and having reduced them to great distress, contented to conclude a treaty with them, which was ratified with great magnificence in barges upon the Danube. Having accomplished this object, Valens returned in triumph to Constantinople.

Valens, having received his Christian creed from Eudoxus, the Arian bishop of Constantinople, disgraced himself by becoming a persecutor of the Athenians: and in a contest between these two parties, he acted in a manner so rigorous and violent, as to entail indelible reproach on his memory. In 371 he lost his only son, and in the following year he defeated the Persians, and afterwards readily condescended to a truce. Whilst he was passing the winter at Antioch, in the year 374, he manifested, in his treatment of persons who recurred to magical practices for ascertaining the name of the future successor to the imperial throne, the jealous cruelty of his character. Many perfons were involved in real or supposed guilt, and confined to the punishment of torture, banishment, or death. Having reigned five years at Antioch, watching the motions of the Perisan king, preparing the inquisitions of the Saracens and Ifaurians, and conducting state inquisitions and religious perfections, his attention was excited by a terrible inroad of the Huns upon the territories of the Visigoths, and these Goths, having obtained permission to cross the Danube, penetrated into the cultivated part of Thrace. The Gothic tribes were joined by the Huns and Alans. The emperor arrived at Constantinople in 378, and urged by the clamours of the people, marched against the enemy to the vicinity of Constantinople. An engagement ensued, which proved singularly disastrous to the Romans. Valens, defeated by his guards and wounded, betook himself to a cottage, in which his attendants were dresting his wound: the cottage was betet by the enemy, who being resisted, set fire to a pile of faggots, that consumed the emperor and all that were with him. Thus did Valens terminate his life at the age of fifty, and in the sixteenth year of his reign. His character, as it has been delineated by historians, merits in many respects contempt and detestation. He was nevertheless modest and temperate in his mode of living; addicted to no private vice or superfluous expense; ready to listen to the complaints of his subjects, and to protect them from the oppression of the military, among whom he preferred exact discipline; and it has been said that the Eastern provinces in general were never happier than under his government. Anc. Un. Hist. Gibbon's Rom. Emp. Gen. Biog.

VALENSONE, in Geography, a town of France, in the department of the Lower Alps; 18 miles S. of Digue.

VALENTANO, a town of the Popeden, in the duchy of Calfo; 14 miles S.W. of Orvieto.

VALENTIA, in Ancient Geography, a town of Hispiania Citerior, upon the Turia. See VALENCIA.

VALENTIA, a town and colony of Gallia Narbonenensis, belonging to the Segalauni, according to Ptolemy, but to the Cavares, according to Pliny. In the Itinerary of Antonine, this town is marked on the route from Mediolanum to Lugdunum, between Augusta and Urfae. As the fall of the Roman empire this town became subject to the Burgundians, afterwards to the Merovingians; but under the Carolingians, it belonged to the kingdom of Burgundy and Arles.-Alfo, a country of the ile of Albion, according to Ammianus Marcellinus. It was conquered by Theodorus the elder, and made a fifth Roman province. (See OTODIN.-)

Alfo, a town of Italy, in Meffapia, between Clipiae and Civitas Brundis, according to the Itinerary of Jerusalem.-Alfo; a town situated in the interior of the ile of Sardinia._

VALENTIA, in Geography, a small island on the coast of Kerry,
VALEN'TIA. See Cape ad Valentinam.

VALENTINE, Peter, in Biography, was born at Colomiers en Brie in 1605, and studied some time under Simon Vouet, but leaving that master before he had made any considerable progress, travelled to Rome, where he palled the remainder of his life: he may therefore be rather considered of the Roman than the French school. The powerful and vigorous style of Michael Angelo Caravaggio made so strong an impression on him, that he attached himself to an imitation of it, with a devotion that was never diminished. Like that artist, he indulged in an extravagant, but effective contrast of light and shadow; like him, he was a faithful follower of nature, and was equally indifferent and unfortunate in his choice of it; like him, he was frequently incorrect, and always ignoble. He was, however, an intelligent master of the chiaroscuro, and his masses are disposed so as to produce the most striking effect. Though he occasionally painted altar-pieces for the churches, his powers appear to have been better adapted to other subjects, which he also appears to have painted in preference. His best pictures represent fortune-tellers, gamblers, concerts of music, and corps de garde; to which his taste was more competent than to the dignity of historic painting. The patronage of cardinal Barberini, nephew to Urban VIII., procured him the commissio to paint a large picture for the Basilica of St. Peter, representing the Martyrdom of S. S. Proceffio e Martiniano, which is esteemed his best historic picture. He also painted for his patron, the Decollation of St. John, in the Palazzo Barberini; and there is an admired picture by him in the Corsini palace, of Peter denying Christ. This pleasing painter died in 1632, at the early age of thirty-two, of a fever, being brought on by going into a cold bath when he was heated.

VALENTINE, in Geography, a town of France, in the department of the Upper Garonne; 2 miles S.W. of St. Gaudens.

VALENTINE'S Bay, a bay on the south-east coast of Terra del Fuego, west of Cape Success.

VALENTINI, Michael Bernhard, in Biography, a native of Gießen, in Germany, where he was born in 1657, and became a medical professor, and where he died in 1729. The subjects of his writings, which are numerous, chiefly comprehend botany and the materia medica: of these we shall here mention his "Letters from the East Indies;" "Praxis Medica," in two parts; "Amphitheatrum Zootomicum," fol.; and a "Corpus Juris Medico-legalis," fol. referring for other works to the botanical article VALENTINIA. Haller.

VALENTINI, Pietro Francesco, of Rome, who flourished about the year 1645, and whose patience and abilities in the construction of canons seem to have made every subsequent canonist despair of emulating his faculties and dexterity in the art. Indeed he appears to have surpassed all that the most determined canonists had ever achieved, by the several works which he published on the subject, in the following order: "Canon to the words Illas duas misericordes oculos ad nos convertite, with the Resolution in more than two thousand ways, for two, three, four, and five Voices, Rome, 1629;" "Canon, called the Knot of Solomon, for ninety-six Voices, Rome, 1631;" "Canon on four Subjects for twenty Voices, Rome, 1645." The first and most curious of these works seems to have been reprinted in 1655, as M. Marpurg of Berlin, and several other musical writers, in speaking of it, refer to an edition of that date. But P. Martini, who is in general very accurate in dates and citations, mentions Valentini's first canonical work under the year 1629. Kircher gives the subject, and an account of this canon, in his Musurgia. M. Marpurg, in a periodical work called Umbierte Riffte, or "Critical Letters on the Art of Music," vol. ii. 1763, 4to. has bestowed upwards of fifty pages on this canon, and not only given it a hundred different ways in notes, but explained more than two hundred of the several contrivances used by Valentini in the construction of canons on the subject given.

Numerous musicians of the name of Valentini have been recorded by musical writers; among whom Gerber gives an article to a nameake of the canonist, Pietro Francesco Valentini, an opera composer at Rome in the middle of the seventeenth century, who, besides Intermezzii, set to music several dramatic fables written by good poets, such as "La Metra," a Greek fable; "The Death of Orpheus;" "Pythagoras finding Musical Proportions," 1654; "The Transformation of Daphne," a moral fable. His Intermezzii were the Rape of Proserpine, and the Captivity of Mars and Venus in the Net.

VALENTINI, Roberto, an Englishman, a voluminous composer for the common flute, whose works were chiefly published by Roger, at Amsterdam.

VALENTINI, Giuseppe, about the latter end of the seventeenth century, among other composers for the violin, a deszina, published in Holland nine different works for that instrument, the seventh and last of which were "Concerti Grossi," for four violins, tenor, and two basses; but they have been long since configned to oblivion, without any loss to the public, or injustice to the author.

VALENTINI, Urbano, the first soprano opera singer who appeared on our stage, arrived in England 1707, after the attempts that were made at operas upon the Italian model.

VALENTINIA, in Botany, received that appellation from Dr. Swartz, in memory of two writers of the name of Valentini, who have both of them contributed to the general flock of botanical information, particularly with relation to the Materia Medica. Michael Bernard Valentini, professor of medicine at Gießen, who died in 1729, aged 72, published Prodromus Historiae Naturalis Haffii, in 1707, Viridarium reformatum, in 1719, Museum Mufatorium, in 1704, and Historia simplicium reformato, printed at different times; besides several dissertations, illustrative of the natural history of Sago, Cloves, Nutmegs, Pepper, Cinnamon, Dates, Aloes wood, &c. His son, Christopher Bernard Valentini, published Tournofortis contratuus, being an arrangement of Tournfort's Institutiones in the form of tables; with some other works.—Swartz Prodr. 63. Ind. Occ. 687. t. 14. Schreb. Gen. 801. Wildl. Sp. Pl. v. 2. 344. Mart. Mill. Diet. v. 4.—Clafis and order, Othanda Monogynia. Nat. Ord. uncertain.

Gen. Ch. Cal. Perianth inferior, of one leaf, concave, coloured, in five deep, obtuse, concave, spreading, undivided segments. Car. none, unless the calyx be taken for such. Stam. Filaments eight, awl-shaped, erect, rather shorter than the calyx; anthers roundish. Pfl. German superior, roundish; style one, the length of the stamens, thick, cylindrical; sigma
On the 3rd of August, 1962, the Emperor Milan, and his son, the young Emperor, were defeated and killed near the river Campa, near the town of Nostra formosa. The Emperor Milan was killed in the battle, and his son, the young Emperor, was taken prisoner. The Emperor Milan's widow, Theodosia, was taken captive, and the young Emperor was later executed. The Emperor Milan was succeeded by his son, the young Emperor, who reigned from 362 to 365. He was succeeded by his son, Valentinian II, who reigned from 365 to 375. Valentinian II was succeeded by his son, Valentinian III, who reigned from 375 to 392.
cidia, sister of the emperor Honorius, by Constantine, one of that emperor's generals, was born in the year 418, and after the death of Honorius, declared emperor of the West. In 437, he was married to Eudoxia, the daughter of Theodotus II.; but during the life of his mother, who died in 450, he took no part in the government. The dread of Attila caused him to retire from Ravenna to Rome, where he professed terms of accommodation with this formidable enemy, which were accepted. The weaknesses and timidity of this emperor occasioned a jealousy of the famous general Actius, and base measures were secretly concerted for putting him to death. Valentinian himself perpetrated the foul deed of his affixation; and this act was followed by the murder of several of his friends. This detestable act, which took place in 454, was succeeded by the violation of the chaste and beautiful wife of Petronius Maximus, a wealthy senator. Her husband, as soon as he was informed of it, determined upon revenge; and for this purpose engaged two of the imperial guards who had served under Actius. One of these seized the opportunity of some military sports in the Campus Martius to stab the emperor to the heart. This event happened in March 455; when Valentinian was thirty-four years of age, and after he had borne the title of emperor twenty-nine years. He was the last emperor of the race of Theodosius, and had all the weaknesses, with none of the virtues of that line. Anc. Un. Hist. Gibbon. Gen. Bon.

VALENTINIAN, in Ecclesiastical History, an ancient and famous sect of Gnostics; thus called from their leader, Valentinus, an Egyptian by birth, who was eminently distinguished by the extent of his fame, and the multitude of his followers. His sect, which took rise at Rome towards the close of the second century, grew up to maturity in the isle of Cyprus, and spread itself through Asia, Africa, and Europe, with amazing rapidity. His principles were much the same with those of the Gnostics, though, in many respects, he entertained opinions peculiar to himself. He placed in the pleroma, as the Gnostics called the habitation of the deity, thirty æons, half male and half female: to these he added four others, which were of neither sex, viz. Horus, Christ, the Holy Ghost, and Jesus. The youngest æon, called Sophia, or Wisdom, conceived an ardent desire of comprehending the nature of the Supreme Being, and by the force of this propensity, brought forth a daughter, named Achemoth; who being exiled from the pleroma, fell down into the undigested mass of matter, and arranged it; and, by the assistance of Jesus, produced the demigurge, the lord and creator of all things. This demigurge separated the animal from the terrestrial matter; and out of the former created the superior world, or visible heavens; and out of the latter, the inferior world, or the terraqueous globe. He also made man, uniting in his composition the animal and terrestrial matter, to which Achemoth added a spiritual and celestial substance. The demigurc, according to Valentine, arrogating the honours of God alone, sent prophets to the Jewish nation to urge his claims; and his ambition was imitated by the other angels that predece over the different parts of the universe. In order to chastise this lawless arrogance, and to illuminate the minds of rational beings with the knowledge of the true and supreme Deity, Christ appeared on earth, composed of an animal and spiritual substance, and clothed, moreover, with an aerial body. The Redeemer, in defending upon earth, passed through the womb of Mary; and Jesus, one of the supreme æons, was united to him when he was baptized by John in Jordan. The creator of this world, perceiving that the foundations of his empire were shaken, caused him to be apprehended and nailed to the cross; but before Christ submitted to this punishment, not only Jesus the Son of God, but the rational soul of Christ, ascended up on high; so that only the animal soul and the ethereal body suffered crucifixion. Those who, abandoning the service of false deities and the worship of the God of the Jews, live according to the precepts of Christ, and submit the animal and senfual soul to the discipline of reason, shall be truly happy; and when all the parts of the divine nature, or all souls, are purified thoroughly and separately from matter, then a raging fire shall spread its flames through the universe, and dissolve the frame of the corporeal world. Such is the doctrine of Valentine and the Gnostics; and such, in general, are the tenets of the oriental philosophy. The sect of the Valentinians was divided into many branches. See Ptolemaists, Secundians, Heracleonites, and Marcionists. Motheim's Eccl. Hist. vol. i.

VALENTINUS, the founder of a sect of heretics, for an account of which, see VALENTINIAN.

VALENSA, in Geography, a town of Italy, in the department of the Gognio, on the Po; 6 miles N. of Alexandria.

VALEPONGA, in Ancient Geography, a town of Hispania Citerior, at the eastern foot of mount Ubeda, near the source of the river Turia. In the Itinerary of Antonius it is marked on the route from Laminum to Toletum, between Ad Putea and Uribia.

VALENS. See PERINIDE VALERE.

VALERIA, VALERIA, in Ancient Geography, a town in the interior of Hispania Citerior, S. of Ergavic. Pliny reckons it in the number of colonies, and Ortelius gives it the epithet of Julia. It was situated in Celtiberia, E. of Suecro, and W. of Lobetum.—Alfo, a town of the ile of Corfica, which had the title of a colony, according to Ptolomy.—Alfo, a country of Germany, comprehending a part of Pannonia, and so called by Maximian, after the name of Valeria, his wife, the daughter of Diocletian. It was situated between the Danube and the Drave.—Alfo, the thirteenth province of Italy, to which Nurtia was annexed. It was between Umbria, Campania and Picenum, and comprehended the country of the Marfs and their lake, called "Fucius."—Alfo, a town of Italy, in Latium, on the Valerian way.

VALERIAN, P. LICINIUS VALERIANUS, in Biogrophy, a Roman emperor, the descendant of an illustrious family at Rome, was betimes so distinguished by his attention both to civil and military affairs, that he was appointed consul and prince of the senate, and also censor. He occupied other stations of considerable trust and importance. At length his own troops proclaimed him emperor, in which choice every individual of the empire was disposed to concur. Accordingly he was invested with the purple A.D. 253, after having passed his sixtieth year. The commencement of his reign was rendered illustrious by many popular and laudable acts, from which eloquence, however, we must except the appointment of his son Gallienus, a vicious youth, to be his colleague in the empire; more especially as in the progress of it he had many enemies with whom to contend; among whom we may enumerate Franks, Goths, Allemans, and Persians, the latter of whom may be deemed the most formidable. When Aetius was surprized and pillaged, under the instigation of Sapor, king of Persia, by Cyriades, who assumed the title of emperor, Valerian marched to the restoration of this city, and having expelled the Scyths, who had taken possession of it, he hastened to cross the Euphrates, in order to relieve Edessa, which was besieged by Sapor. After a vain attempt for this purpose, he was reduced to the necessity of negociating with the Persian king. The result, however, was, that
that he became a captive to Sapor, A.D. 260, and was treated cruelly and ignominiously in his captivity. This di-
trofl was aggravated by the ingratitude of his son Gallienus, who afforded him no relief in his captivity, but took advantage of a report of his death to raise him to the rank of a

god. After languishing in this state for a considerable time, he died in Persea; and it was rumoured, that after his death, his skin, fluffed with straw, was hung up in a temple, where Sapor exhibited it as an humiliating spectacle to the ambas-
dadors from Rome. Valerian, whose administration was
charged with want of vigour and activity in reuniting the
foes of the empire, was not unjustly reproached as a per-
feator of the Christians. Regarding them as the enemies of
paganism, he inflamed an edict, which produced the eighth
perfection, as it has been called by ecclesiastical historians, and
which was both general and severe, and lasted from the year
257 to the period of his captivity. The calamities which he
suffered have been represented as a judgment upon him for
this cruelty. He was twice married, Gallienus being the
offspring of the first marriage; and by the second he had at

**VALERIANA.** In *Botany*, a name which seems to have
originated with the physicians of the dark ages, and which
is evidently derived from *valere*, to be powerful, or efficacious,
in allusion, as Caepar Baulinus and Ambrosius tell us, to the
many virtues of the plant. Linnaeus, in Phil. Bot. 1713,
accountably ranks this name among those derived, like
*Gentiana*, *Euapotium*, &c. from kings.—Linna. Gen. 22.
Gertn. t. 86.—Clas and order, *Triandra Monogynia*. Nat.

Gen. Ch. Calyx obsolete. Corolla superior, of one petal, gibbous on one side, at the base. Seed solitary.

Obs. Linnaeus remarks as follows on the wonderful dif-
ferences of form and number in the parts of *fructification*,
among the various species of this genus.

The *calyx* in some is a scarcely discernible border; in
others five-fert. Tube of the *corolla* in some oblong; in
a few furnished with a four-flaped nectary: in others very
short. Its limb in some equal; in others two-lobed, the
upper lip divided. *Stamens* in several three; in some two;
in others one, or four; in some removed to a different flower
from the pistil. *Stigma* in some three-fert; in others emar-
ginate; in others globose. *Pericarp* in some scarcely any;
in others a thick capsule; in others of two cells. Seed
sometimes crowned with feather down, whose form is va-
sious; sometimes without any.

By the above detail, the reader will be able to see that
Lin-
naeus includes under this genus the *Festa* of Adanson, (see
that article,) which is what Tournefort, Vaillant, and re-
cently Decandolle, have called *Valerianella*. The fame
genus is adopted, under the last-mentioned name, by our
worthy friend Mr. W. J. Hooker, in his continuation of
Curtis's *Flora Londinensis*. Such diminutives of already
established names, however, being contrary to the laws of
Linnaeus, *Phil. Bot. fett.* 227 and 228, and, which is still
more important, repugnant, in the highest degree, to good
sense, have never been admitted by any writer, even the least
correct, since Linnaeus first promulgated found principles of
nomenclature, and can have been refuted to by the above
excellent botanists, through inadvertence only. *Fedia*, being
unexceptionable, and received by Vahl in his *Enumeratio
multuperfide Valerianella*, provided the genus be allowed
to remain, of which we have already expressed our doubts.
We have indeed little scruple, all things considered, in
rejecting it. (See our 33d, 45th, and following species.)
But having already noticed *Fedia* in its proper place, we
shall here confine ourselves to the generally admitted *Val-
rianas*, which constitute an ample genus, recently augmented
by Vahl, whose arrangement of species we follow, from the
*Flora Peruvian*, and other sources; to which we have also
something to add.

The genus under consideration is composed of herbaceous
plants, either perennial or annual, with an upright round
stem, and opposite leaves; which are mostly simple; rarely
ternate or pinnate. *Flowers* terminal, numerous, opposite;
corymbose or panicled; generally reddish, or flesh coloured;
rarely yellowish; and rarely blue. The *roots* of some are di-
finguished by a mull potent and very peculiar odour.

(V. rubra Dodonza; Ger. Em. 678. V. marina; Rivn.
Monop. irr. t. 3. f. 2. Phu peregrinum; Camer. Epit. 24.)
—Stamen one. Spur of the flower elongated. Leaves lance-
olate, nearly entire.—Native of walls, waste ground,
chalk-pits, and dry hilly places, in England, Switzerland,
France, the north of Africa, Greece, and other parts of
the Levant. Certainly wild in the chalk-pits of Kent;
flowering from June to September. The plant is common
in gardens, and on old walls. A deep red *variety* is usually
preferred for cultivation. The *root* is perennial, fetid, or
rather flabby. *Whole herb* very smooth, a little glaucous,
eighteen inches or two feet high. *Upper leaves* often
toothed, broadly ovate, with a long point. *Flowers* pink,
very rarely white, slender, not inelegant, very numerous,
in a dense repeatedly branched *corymb*. *Seed-crown* of
many feathery entangled rays, gradually unrolled after the
flower is past.

n. 2. Vahl n. 2. Ait. n. 2. Cavan. Is. v. 4. 32. t. 553.
Sm. Fl. Graec. Sibth. v. 1. 22. t. 29. (V. rubra &; Linn.
Sp. Pl. 44. V. rubra angustifolia; Bauh. Hist. v. 3.
part 2. 211.)—Stamen one. Spur of the flower elongated.
Leaves linear-lanceolate, blunted, entire.—Native of hilly
situations in France, Italy, Switzerland, and the Levant,
but not yet observed in England. Dr. Sibthorp gathered it
on the highest hills about Athens. This is very nearly
related to the former, with which it agrees altogether in
habit and flowers; but the leaves are all uniformly narrow,
almost linear, quite entire, and more obtuse at the ex-
tremity.

44. Willd. n. 3. Vahl n. 3. Ait. n. 3. Sm. Fl. Graec.
Sibth. v. 1. 22. t. 30. (V. folis calcitrapa; Morff. feot. 7.
t. 14. f. 7. V. annua, feu ævita; Cuf. Hift. v. 2. 54.
Ger. Em. 1077.)—Stamen one. Corolla slightly flurred.
Leaves all pinnatifid and fefile.—Native of Portugal, the
north of Africa, the Levant, and even of Peru; but Vahl juftly
suspects its having been transported thither from Europe.
It is become a weed on many walls about Chelsea, having,
doubtful, escaped from the physic garden there. An an-
nual upright herb, fearely branched, flowering in May
and
and June; the leaves slightly lyrate; flowers small, rose-coloured. Seeds spiky, with a feathery crown.

4. V. arboiculata. Round-leaved Valerian. Sm. Fl. Græc. Sibth. v. t. 23. t. 31, marked rotundifolia.-Stamen one. Corolla slightly spurred. Lower leaves stalked, orbicular, somewhat heart-shaped, slightly toothed.—Gathered by Dr. Sibthorp and Mr. Ferdinand Bauer, on hills in the isle of Cyprus, flowering in the spring. Annual, and agreeing in habit with the last, but of rather humber growth, and especially distinguished by its round leaves, hardly an inch broad, purple beneath; the uppermost pair only being pinnatifid at their base. Flowers variegated with red and white, in twofold flaked fikes, much elongated as the seeds ripen.

5. V. oblongifolia. Oblong-leaved Valerian. "Fl. Peruv. v. l. 40. t. 65. f. a." Vahl n. 4.—"Hairy. Radical leaves oblong, toothed, obtuse; those of the stem linear, with tooth-like deep ferratures."—Found on the lofty mountains of Peru. Root fibrous, rather thick. Stems several, striated, almost leafless, except under the flowers; the central one taller, eighteen inches high. Radical leaves stalked, daintily toothed; the floral ones leafy, linear-lanceolate. Flowers fifele, in a dense corymb. Vahl.


7. V. Phu. Garden Valerian. Linn. Sp. Pl. 45. Willd. n. 7. Vahl n. 6. Ait. n. 6. (V. hortensis; Ger. Em. 1875; Rivin. Monop. Irr. t. 2, Philum minimum; Fuch. Hill 856. Matth. Valgr. v. 1. 36.)—Radical leaves elliptical, undivided; the rest pinnatifid, somewhat lyrate; the upper ones with lanceolate, acute, entire segments.—Native of Germany. An old inhabitant of our gardens, where it was anciently called Setwall, or Cettiwall. A large perennial species, flowering from May to July. Stems three or four feet high. Herbage smooth, light green, with spreading leaves, mostly lyrate; except those at the bottom. Flowers corymbose, pale purplish bluish-coloured. The flaky root has a peculiar aromatic scent, and is supposed to partake of the virtues of the Officinal Valerian. Cats are extremely fond of it, and delight in rolling themselves among the flasks and leaves, which they hence frequently deftly.


9. V. crispa. Curled Valerian. "Fl. Peruv. v. l. 41." Vahl n. 8.—"Lower leaves ovate-oblong, with tooth-like ferratures; the rest somewhat pinnate, with ferrated undulated leaflets."—Native of meadows, fields, and cultivated ground, in Chili. Root with many small fibres. Stem two feet high, branched, brittle, frigate, hollow. Leaves stalked; those of the stem more or less perfectly pinnate; their leaflets sessile, reflexed, wavy and crisp, gradually smaller downward; the odd one very large. Clusters forked. Vahl.

10. V. interrupta. Interrupted-leaved Valerian. "Fl. Peruv. v. l. 42. t. 67. f. a." Vahl n. 9.—"Radical leaves interruptedly pinnatifid; their longer segments also somewhat pinnatifid. Stem nearly leafless."—Found on the lofty mountains of Peru. Root perennial, thick, divided. Herb juicy and smooth. Leaves all radical, except a pinnatifid pair under the corymb, not much unlike those of Scorzonera lociniata. Stalks terminal, three together, each bearing a head of scifele flowers, with linear bracteas to each. Corolla white, five-cleft. Vahl.

11. V. lyrata. Lyrate Valerian. Vahl n. 10.—"Radical leaves lyrate; segments oblong, with tooth-like ferratures; the terminal one somewhat pinnatifid; those of the stem leaves linear-lanceolate."—Native of Peru; seen by Vahl in Jussieu's herbarium. Stem smooth, a spain high, bearing two leaves. Radical leaves stalked, half the length of the stem; their terminal lobes very large, measuring two inches; lateral ones alternate; deeply and bluntly ferrated; leaflets sessile, half an inch long; all smooth. Partial flower-flaks racemose, three-cleft, forked. The aspect of the plant is like V. calcitrapa. Vahl.


15. V. polyficala. Many-spikeled Valerian. Sm. Pl. 1c. t. 51. Willd. n. 19. Vahl n. 14.—Leaves pinnate; leaflets deciduous, nearly entire. Spike compound, whorled.—Gathered by Commeron, in watery situations at Buenos Ayres. Stem two feet high at leaf, ascending, frigate, smooth, leafy. Leaflets smooth, nearly uniform, about an inch and half long; the odd one now and then slightly toothed; the lowermost much diminished. Flowers white, very numerous, in dense cypions whors, subtended by lanceolate
ceolate **bracteae**, and forming a compound spike, not unlike that of some *Menitza*. It is doubtful whether the seed has any feathery crown.


This plant having, till very lately, seen the next species, been generally taken for the famous *zoo*; or Valerian, of Dioscorides, has been universally employed in medicine, for the cure of nervous head-aches, hysterical and epileptic disorders. The mountain kind, being less acrid and more aromatic, is preferred for use, and is kept in all apothecaries' shops, in whole “compound of villainous smell” its flavour notably predominates.

17. *V. Dioscoridis*. Ancient Grecian Valerian. Sm. Fl. Græc. Sibth. v. 1. 24. t. 33. (ζωή; Dioec. book 1. chap. 10.)—Stamens three. Leaves all pair; leaflets of the lyrate radical ones ovate, with wavy teeth. Root tuberous.—Gathered by Dr. Sibthorp near the river Li-murys in Lycya, as we are informed by Mr. Hawkins, the learned companion of his tour. The profferor himself first, of all modern botanists, discovered this plant, and justly concluded it to be the real ζωή, for which our common wild Valerian has been always mistaken. The oblong tuberous perennial root has a much more pungent, peppery, more durable, and yet less nauseous, odor than the leaf described. The stem is hollow, simple, about two feet high. Herb feathery. Radical leaves numerous, lyrate, dilated with the ovate form, and wavy margin, of all their leaflets, of which the odd one is much the largest, and somewhat heart-shaped; those of the stem few, lanceolate, narrow, partly serrated. Flowers very like the last.

18. *V. italic A*. Italian Valerian. Lamarck Illufr. v. 1. 92. Vahl n. 16. (V. tuberosa; Imperato Hilt. Nat. 656; Bauh. Hilt. v. 3. part 2. 207. V. tuberosa Imperati; Tourn. Cor. 5. Barcel. le. t. 825. V. annanthes radice; Morif. fect. 7. t. 15. f. 4.)—Stamens four. Leaves all pair; leaflets of the radical ones ovate, nearly uniform, sharply toothed. Root tuberous.—Gathered by Imperato on the mountains of Liguria. We have only his figure, which all authors have copied, to guide us; except Vahl’s description, made from a specimen in Jussieu’s collection.

This appears very nearly the same with our *V. Dioscoridis*, especially the root, which is said to smell like Nard. The leaves however are represented as much more strongly toothed, more equally pair, and not lyrate; the upper pair indeed have narrow entire leaflets, refembling our last. The flowers are white, more densely corymbose, and afforded by Lamarck to have four *flamens*, which, if correct, and con-

**VALERIANA.**

19. *V. fysymbriafole*. Water-cresf-leaved Valerian. Vahl n. 17. (V. orientalis, fysymbri Matthioli folio; Tourn. Cor. 6.)—“Leaves all pair; leaflets roundish-ovate, entire.”—Native of the Levant; examined in Juffieu’s herbarium by Vahl, who declares it, contrary to Buxbaum’s opinion, to be totally distinct from *V. dioica*. The plant resembles *Symbrium Naifurrium*. Stem from six to twelve inches high, finely fingered, smooth, as well as our other part. Leaves stalked, pair, of two or three pair of leaflets; the innermost of which are small, alternate, and somewhat fingered; the outer fingered and opposite; the odd one an inch long, ovate or roundish, very blunt, obscurely ribbed; sometimes the top leaves are ternate only. Flowers in a dense, level-topped, nearly simple corymb, resembling those of *V. officinalis*. Bracteae linear, shorter than the flower. *Stamens* three. *Style* three-cleft. This appears, by the above description of Vahl, to be likewise related to *V. Dioecorus*. We have seen neither specimen nor figure.

20. *V. capensis*. Cape Valerian. Thub. Prodr. 71. Willd. n. 5. Vahl n. 18.—“Leaves pair; leaflets ovate, toothed. Stem hairy at the joints.”—Found by Thunberg at the Cape of Good Hope. The stem is said to be furrowed; smooth, except the joints. Corymba forked.


22. *V. decussata*. Cross-branched Valerian. “Fl. Peruv. v. 1. 42. t. 70. f. b.” Vahl n. 20.—“Leaves pair; leaflets lanceolate, finely toothed; hoary and downy beneath. Branches of the panicle forked and diversified.”—Gathered about hedges, and rocky places, in Peru. Stem herbaceous, though somewhat climbing, three feet high, frigated, hollow, a little downy. Leaves on short stalks; leaflets gradually larger downwards, daintily and minutely toothed; downy above; more densely so beneath. Panicule very large, with horizontal partial flower-flalks. **Bractea** under each division linear. Corolla minute, white. Seed crowned with ten or twelve rays. *Vahl.*


24. *V. Fangisforbofia*. Burnet-leaved Valerian. Cavan. Le. v. 5. 34. t. 456. Vahl n. 22.—Leaves pair; leaflets ovate, toothed. Corymba compound. Stem hairy at the joints.—Native of the Cordilleras of Chili, flowering in January. The stem is about a foot high, ascending, leafy. Radical leaves stalked, of about six pair of small,
Valeriana.

25. *V. virgata*. Many-twig’d Valerian. "Fl. Peruv. v. 1. 42. t. 66. f. b." Vahl n. 23.—Leaves pinnate; leaflets cloven or three-leaf, with linear segments. Branches of the corymb forked.—Native of precipices in Peru. Smooth, with the habit of *Tagetes minuta*. Stem rather shrubby, three feet high, much branched, square, fricated, scarcely hollow, obscurely downy; the branches upright and wand-like. *Leaves* minute; some undivided; others with two, three, or four, linear, emarginate or entire, segments; thinning on the upper side. Partial *flower-flanks* forked, with opposite linear *bracteas*. *Flowers* feffile in the forks. Seeds fricated on one side, gibbous on the other. *Vahl*.

26. *V. montana*. Mountain Valerian. Linn. Sp. Pl. 45. Willd. n. 9. Vahl n. 24. Ait. n. 8. Jacq. Auct. t. 269. (V. alpina, scrophulariae folio; Bauh. Prodr. 87.)—Leaves ovate-oblong, simple, unequally toothed; the lower ones flaked; upper pointed. Stem fimple, rather downy. —Not very uncommon in ftony ground, on the alps of Switzerland, the Grifens, Germany, and the Pyrenees, flowering in July and August. The root is long, creeping, perennial, with a flight degree of the flavour belonging to this genus. *Stems* a foot high, more or less, ascending, leafy, unbranched. Radical *leaves* on long flanks, heart-shaped or spatulate, acute, smooth, an inch or two in length, with various broad, shallow, wavy teeth; the rest more oblong and pointed, on short flanks. *Flowers* numerous, corymbose, small, pale fleshy-coloured.

27. *V. intermedia*. Ambiguous Valerian. Vahl n. 25. —"Leaves fimple, nearly entire; the lowermost oblong-heart-shaped; uppermost lanceolate; three pair on the stem." —Brought from the Pyrenees by Mr. Hornemann. Akin to the laft, though the *leaves* being not heart-shaped, nor toothed, as in that, but lanceolate and entire, induced professor Vahl to except it from the last.

28. *V. tripteris*. Three-leaved Valerian. Linn. Sp. Pl. 45. Willd. n. 8. Vahl n. 26. Ait. n. 7. Jacq. Auct. t. 268. (V. alpina prima; Bauh. Prodr. 86. V. alpina faxatilis minor, folio albo; Barcel. t. 1. t. 742. V. alpina miior, et minima; Pluk. Phyt. t. 234. f. 7. 8.)—Leaves toothed; the radicals one heart-shaped, simple; thefe of the stem ternate, ovate-oblong; their lateral leaflets lanceolate. —Found on the alps of Austria and Switzerland, intermixed with *V. montana*, but flowering a little earlier, and the *flowers* are more generally white. Nevertheless, thefe two species are fo very nearly akin, that we could almofit fuppeft them to be varieties of each other, and that Vahl’s *intermedia* may belong to one and the fame species.

29. *V. villosa*. Downy Valerian. Thunb. Jap. 32. t. 6. Willd. n. 18. Vahl n. 27.—Stamens four. Corolla equal. Leaves densely downy; the radical ones auricled; floral ones toothed. —Native of various places in Japan, flowering in September and October. The root appears to be perennial. Whole herb densely downy or hairy, a fpan high, unbranched. *Leaves* all toothed; the radicals one flaked, oval, near two inches long, with a pair of much smaller confluent auricles. *Panicle* corymbose, forked. *Flowers* yellow. Willdenow refers this species, like *V. flbrica*, to the *Fed~a*, but Vahl makes it a *Valeriana*. Having feen no fpecimen, we are unable to form a decided opinion, the fruit root having been noticed by Thunberg, whose figure and defcription are our only authority.

30. *V. pyrenaica*. Heart-leaved Valerian. Linn. Sp. Pl. 46. Willd. n. 14. Vahl n. 28. Don. Herb. Brit. falc. 4. 77. Sm. Compend. ed. 2. 8. Engl. Bot. 1. 1591. (V. maxima, caerule folio; Pluk. Phyt. t. 232. f. 1. V. canadensis; Rivin. Monop. Irr. t. 4.)—Stem leaves heart-shaped, ferrated, all flaked; the upper ones pinnate or ternate.—Native of the Pyrenees, and of Scotland; having been found by the late Mr. George Don, about ditches and walls at Blair-Adam, Kinroifhire, and fubfequently near Glasgow and Edinburgh, flowering in June. Dr. Brown of Glasgow has also met with this plant in feveral woods of the froth of Scotland, widely feparated from each other. It is perennial, from three to five feet high, of a ftony habit, and dark green hue, nearly smooth, poifoning the smell, probably the *Valeriana officinalis*, *Dioscorides*, &c. Stem downy about the summit, as are the upper *flower-flanks* all over. *Leaves* large, with copious, unequal, tooth-like ferratures; the radical ones, sometimes the others, fimple; but for the moft part the *flames* bear one or two pair of small lanceolate *leaflets* on their flanks. *Flowers* rofe-coloured, in a feafe, large, compound, terminal *corymb*. *Spur* obfolete. *Stamens* three.

31. *V. alliarifolia*. Garlick-mustard-leaved Valerian. Vahl n. 29. (V. orientalis, alliafio flio, folio albo; Tourn. Cor. 6. Buxb. Cent. 2. 19. t. 11.)—Leaves heart-shaped, unequally toothed, all fimple; the upper ones fefile. —Gathered by Tournefort in Capadocia. Diftinifhed from the laft, with which Linneus confounded it, by being perfectly smooth, with thinner *leaves*; besides what is expreffed in the specific definition. Vahl examined Tournefort’s original fpecimens. The *flowers* are white.

32. *V. lapathifolia*. Dock-leaved Valerian. Vahl n. 30. —"Leaves heart-shaped-ovate, undivided, nearly entire; the upper ones fefile." —Gathered by Commeron, in the *fruits* of Magellan. *Root* perennial. *Stem* a foot or more in height, as thick as a goose-quill, ifrated, smooth. Leaves three inches long, gradually smaller upward, acute, entire, or fometimes slightly crenate, ribbed, obscurely veined, smooth, except the upper side of the ribs; thofe at the root, and lower part of the *flent*, flaked; upper pair fefile; lowest ferial leaves linear, obtufe, fringed at the fide. *Flower-flanks* corymbose; the axillary ones opposite, of few flowers; terminal ones three-forked, many-flowered. *Stamens* three. Vahl. We fud no fpecimen of this species among the large communications of M. Thounin to the younger Linneaus.

33. *V. carnosa*. Feffhy-leaved Valerian. Sm. Plant. 1. c. t. 52. Willd. n. 22. Vahl n. 31. (V. magellanicas; Lamarr. Illlfr. v. 1. 63.)—Leaves oval, toothed, fleshy, glaucous; the radical ones on long flanks.—Gathered by Commeron, in the *fruits* of Magellan. *Stems* about a foot high, erect, fimple, smooth. *Leaves* all, according to Commeron, thick, fucculent and glaucous; radical ones fubfite, an inch or inch and half long, with broad unequal teeth; tapering at the bafe, into a *footflank* twice or thrice their own length; *flent-leaves* about three pair, much fmalier, nearly fefile. *Flowers* purple, nearly regular, triandrous, in small, dense, level-topped *corymb*. Seed crowned with teeth, rather than with feafhery down; so far at leaft as we can judge from our fpecimens. It is not imposfible that this species may be a *Fed~a*, as Willdenow makes it; though the *fed~* and that of *Fed~a* (or Valeriana) *Cornucopia* reemines true Valerianas. Indeed our *carnosa* and *poliflachy* appear to form, through *V. Cornucopia*, the connecting links of these two genera.

34. *V. tuberosa*. Tuberous-rooted Valerian. Linn. Sp. Pl. 46. Willd. n. 11. Vahl n. 32. Ait. n. 10. (Nardini...
VALERIANA.

36. V. elongata. Long-clawed Valeriana. Linn. Sp. Pl. 1664. Willd. n. 13. Vahl n. 34. Jacq. Enum. 205. t. 1. Aufr. t. 219. (Nardo celtica simili alia, five Valeriana alpina minor; Linn. Am. Acad. v. 1. 155.).—Radical leaves ovate, ovate; those of the stem, fimple, ovate, somewhat heart-shaped, broad, toothed, and cut. |Panicule loose, elongated.—Native of the Austrian mountains of Carinthia, and one found by Scopoli in Carniola. This is one of the rarest alpine plants, and appears never to have been seen by Vahl. It is perennial, flowering in June and July. Stem from four to six inches high, simple, leafy, smooth like the rest of the herb. Leaves from an inch to an inch and half long, mostly ovate; the upper pair small, narrow, and jagged. Flowers small, pale yellow, with a tawny tinge, forming a lax, racemose, forked, compound Panicle; about two inches long. We have not seen the crown of the seed, nor does any author describe it.

37. V. supina. Dwarf Valeriana. Linn. Mant. 27. Willd. n. 17. Vahl n. 35. Ard. Spec. fasc. 2. 13. t. 3. Wulf. in Jacq. Misc. v. 2. 114. t. 17. f. 2.—Leaves simple, spathulate, entire, fringed; the uppermost lanceolate. Found about the boggy fandy margins of mountain rills, on the alpine heights of Austria, Carinthia, and the Tyrol, near the limits of perpetual snow. The creeping perennial roots throw out many trailing feyns, and are crowned with severa dense tufts of stalked, obvate, bright-green leaves, smooth on both sides, finely fringed with short hairs. Stems two or three inches high, more or less leafy, corymbose at the top. Bracteas long, lanceolate, acute, fringed. Flowers of a delicate rose-colour. Stamens occasionally four. Seed-crown long and feathery.

38. V. faxatilis. Rock Valeriana. Linn. Sp. Pl. 46. Willd. n. 12. Vahl n. 36. Ait. n. 11. Jacq. Aufr. t. 267. (V. sylvestris alpina alcea faxatilis; Clof. Hilt. v. 2. 56. V. alpina angustiiola; Ger. Em. 1077.).—Leaves simple, undivided; radical ones elliptical, three-ribbed, rather hairy, entire, or slightly toothed; those of the stem linear. Corymbs racemose.—Native of the Alps of Styria, Italy, and Austria, but rarely in the latter country, as we are informed by professor Jacquin, jun. to whom we are indebted for specimens. The root is perennial, crowned with fibrous remains of old leaf-flakes. Stem a span high, slender, smooth. Radical leaves on long stalks, erect, an inch and half or two inches long, obtuse, almost perfectly entire, a little hairy occasionally; tapering at the base; those on the stem long and narrow, stalked, sometimes a little jagged, scarcely more than one pair, about half way up the stem, except the still narrower and smaller bracteas at the base of the inflorescence. Flowers few, white, corymbose, each little tuft supported by a very long slender stalk. Jacquin affirms them to be dioecious. He gives no account of the structure of the seed-crown, nor do we find that part any where described.

39. V. Salicaria. Italian Nard Valerian. Allianz. Pedem. v. 1. 3. t. 70. f. 1. Vahl n. 37. (Salicaria neapolitana; Dackeh. Hilt. 982. Nardus ex Apulia; Bauh. Pin. 165.).—Leaves linear-narrowed, entire or partly toothed, rather fleshy, quite smooth. Flowers in a dense round tuft.—Native of the mountains of Italy and Dauphiny. The root is cylindrical, woody and perennial, branched at the top, and crowned with many tufts of oblong-lanceolate, or spathulate, stalked leaves, more or less obtuse, of a much thicker texture than the leaf, an inch and half long. Stems solitary, two or three inches high, bearing about the middle a pair of combined smaller leaves, occasionally jagged or pinnaflid at the base. Sometimes there is a similar pair lower down. The flowers are crowded into a rounded head, sometimes accompanied with two small corymbose branches just below, and subtended by two or four oblong entire bracteas, as well as intermixed with smaller ones, all slightly fringed. Stamens three. Seed frilled, with a feathery bracteas. The herb is smooth in every part, except the bracteas, and very strongly scented.

40. V. celtica. Celtic Nard Valerian. Linn. Sp. Pl. 46. Willd. n. 10. Vahl n. 38. Ait. n. 9. Jacq. Coll. v. 1. 24. t. 1. (V. n. 209; Hall. Hilt. v. 1. 91. Nardus celta; Ger. Em. 1799. Spica celta; Camer. Epit. 14.).—Leaves oblong, obtuse, entire, rather fleshy, quite smooth. Flowers racemose; partial flacks capitate.—Native of the Alps of Austria, Switzerland, &c. Root oblong, creeping, ficy, with a very powerful and oppfensive peppery smell. Herb of the stature of the leaf, with fleshy, smooth, but always entire, leaves. Inflorumence widely different, so that these species can never be confounded by those who have seen in them flower. The cluster of the preffent is about two inches long, lax; each branch, whether fimple or forked, terminating in a little bracteas head, of three or four fefile yellowish flowers, with three flaments. The seed has a feathery crown, and is sometimes covered with dense hairs.
of Peru. The habit of this species is like Polygonum Perfoliata. Stems several, much branched, with a grey bark; branches ascending, straight, jointed, somewhat theaded, hollow; marked when young with two downy lines, alternately crooking each other, of a dark tawny colour, fibrated. Leaves tapering and fringed at the base, but otherwise smooth. Common flower-transverse; petals vary, in size and shape. Lower petals ovate, oblong, acute, smooth, fringed, with a rather pungent point; lying over one another in an imbricated manner, the innermost being gradually smaller. Flower-flakes, if any, very short, in the centre of the leaves, compressed, white, tapering at the base. Flowers with a general, as well as partial, involucrum, each of one leaf, sheathing, divided. Calyx a very minute border. Stigma cleft. Seed naked. Vahl.

48. V. tenuifolia. Taper-leaved Valerian. "Fl. Peruv. v. t. 39. t. 65. f. d." Vahl n. 46. — Stem none. Leaves linear-awl shaped, aggregate, sessile, imbricated, spreading; the outermost very long. Native of the mountains of Peru. Root perennial, spindle-shaped. Radical leaves numerous, unequal, spreading in the manner of a star, entire, velvety, smooth and shining, with a rather rigid point; dilated and membranous at the base; ciliate in their lower part. In other respects this species agrees with the last, both being widely different in habit from the rest of the genus. Vahl.

VALERIANA, in Gardening, contains plants of the hardy, herbaceous, perennial kind, among which the species cultivated are, the common or broad-leaved red valerian (V. rubra); the narrow-leaved red valerian (V. angustifolia); the cut-leaved valerian (V. calcitrapa); the garden or white Allatian valerian (V. phu); the three-leaved valerian (V. tripeteris); the mountain valerian (V. montana); the Celtic valerian (V. celtica); the tuberos root valerian (V. tuberoa); the Pyrenean valerian (V. pyrenaica); the officinal valerian (V. officinalis); and the common corn-fallad, or lamb's lettuce (V. olitoria).

The first sort differs in some degree in the colour of its flowers; they being in some plants of a deep red, in others of a pale red, a bright red, and there are others which have white flowers. The second sort has bright red flowers, smaller than those of the former. The third is an annual plant, which has the flowers shaped like those of the fourth sort, but smaller, and tinged with flesh-colour at the top; and it varies with the lower leaves pinnatifid. The fourth sort has the branches terminated by bunches of small white flowers, the odour of which is very agreeable. The fifth has the flowers numerous, white, and in loose bunches. In the sixth sort the stem is upright, simple, a foot or eighteen inches high, with the flowers of a whitish or purplish colour, in a bunch. The seventh sort has the stem flatter, simple, and terminated by a few small white flowers in a bunch. The eighth sort is easily distinguished by its tuberous roots; and there is a variety with the roots in the form of an olive. The ninth sort has the stem and branches terminated by umbels of pale flesh-coloured flowers, with very short spurs. The tenth sort has the stalks two feet high, all of which and the branches are terminated with umbellate clusters of flowers tinged with purple. The last sort has the flowers very small, of a pale blue or purple colour, and collected into a close little bunch. It is used in salads in the spring and winter, under the name of corn-fallad, or lamb's lettuce.

There is a variety which is smaller, with jagged leaves; the size of the leaves also differ much, being in some narrow, and in others broad, and likewise in the shape; but they are all used indifferently as fallad herbs while young.

Method of Culture.—The two first sorts may be increased by parting the roots, and planting them out in the autumn or spring, where they are to grow. They may also be raised from seed sown at the same times, in the situations where the plants are to grow. The third may likewise be raised from seeds, by sowing them as above, without any trouble. The fourth may be increased by parting the roots, and planting them out in the autumn, on fresh ground where they are to grow. The fifth may be raised.
VALEIRIANA.

The powdered root, infusied in water, or digested in rectified spirit, impregnates both meniftra strongly with its fnell and taste, and tinges the former of a dark brown, and the latter of a brownish-red colour. Water distilled from it fnells considerably of the root, but no effential is separable; the extract obtained by infifipating the water, exfufion, which is about one-fourth the weight of the root, has a pretty strong taste, difagreably sweetish, and somewhat bitterish; the ipirituous extract, which is about one-eight the weight of the root, is difagreable, and more perfctly resembles the root itself.

Tinctures of it are prepared in the shops, by digifting four ounces of the powdered valerian in a quart of ipirit, in the fame quantity of the volatile aromatic spirit, or of the dulled spirit of fal ammoniac. The root in fubstance, however, is generally found to be more effecual than any preparation of it: and its fame may be laid to be confined with wace. Lewis and Woodville.

VALEIRIANELLA, in Botany, the diminutive of VALEIRIANA, fee that article and FEDA.

VALEIRIANO BOLZANI, Pietro, in Biography, was born at Belluno, in 1477, in fuch a low condition, that he had no opportunity of acquiring the firft elements of literature till he attained the age of fifteen years. After having been reduced to the neceffity of entering into the fervice of a noble perfon at Venice for fupport, he devoted himfelf to study under eminent teachers; and agreeably to the practice of the age in which he lived, changed his baptismal name of Giampietro for Pietro. In his 23d year he engaged in the study of philofophy at Padua, and pafled three years in a retreat at mount Olivet, in the Veronef. Upon his return to his native place, he found it poifoned by the imperial army
army in 1509, so that he was obliged to make his escape to Rome. Here he fortunately became known to cardinal Giovanni de Medici, by whom, when pope Leo X., he was honourably provided for in his court. At the termination of this pontificate, he passed some time at Naples; but upon the accession of Clement VII. he returned to Rome, and was promoted to the chair of eloquence, with the title of prothonotary and private chamberlain, to which was added a canonry, and some other benefice in Belluno. Having employed himself in Latin poetry, he reinstituted the composition of elegies and amatory pieces, by which he had acquired reputation, upon taking holy orders. To him Leo X. committed the instruction of his two nephews, Ippolito and Alessandro de Medici, and he accompanied them to Florence, where he resided in the year 1527, when they were expelled from that city. After sharing their misfortunes, he attended them to Florence in 1530. Upon their death, he withdrew first to Belluno, and then to Padua, where he closed his life in 1558, at the age of eighty-one years.

The work by which he is principally known, is his treatise "De Infelicitate Literatorum," first printed at Venice in 1620, and often reprinted. Another of his publications was entitled "Hieroglyphica, live de facris Aegyptiorum alias ubique Gentium literis Commentariorum," Lib. LVII.;" Bafil, 1566. Some of his other performances were, "De Fulminum Significationibus," Rome, 1517; "Pro Sacerdotum Barbis defenso," 1531; "Calligations Virgiliane Lecture," first printed in R. Stephens's edition of Virgil, Paris, 1532, and since annexed to various other editions; and "Antiquitates Belunenses." He also published two volumes of his Latin poems. Moreri. Tiraboschi. Gen. Biog.

VALENIUS FLACCUS. See Flaccus.

VALENIUS MAXIMUS, a writer whole history is little known. The work which has been ascribed to him, and entitled "De Dictis et Factis Memorabilibus Antiquorum, Lib. IX." appears to have been written in the reign of Tibcrinus, probably after the death of Scjanus, and dedicated with high eulogy to Tibcrinus. It is cited by Pliny the elder, Plutarch, and A. Gellius; and it was much read and quoted at the revival of literature in Europe. One of the early editions, which were numerous, is supposed to have been prior to 1460; of the later editions, the most esteemed are the "Variorum," Lugd.-Bat. 1670; the "Delphin," Paris, 1679; "Torrensi," Lugd.-Bat. 1726; and "Kappii," Lipf. 1782.

VALENIUS POPPLICOLA, PUBLIUS, an eminent Roman, and one of the founders of the republican government, distingulished by his simplicity, eloquence, and liberality. In a contention about the confulate, at the expulsion of the Tarquinian family, he was elected to supply the place of Collatius, who was removed from office, and lived on terms of the utmost harmony with his colleague, the celebrated Junius Brutus. In the subsequent battle with the allies of Tarquin, in which Brutus was slain, Valerius gained a victory, for which he obtained a triumph, B.C. 507. Delaying the election of a new conful, and having built a house on the Palatine hill, that overlooked the forum, he excited the fulpicion of the people; but as soon as he understood the ground of their jealousy, he ordered the house to be levelled in the night, and gave orders for supplying the vacancy in the con- fulate. The father of Lucretia was chosen, but by his death soon after his election, Valerius was again the sole chief magistrate. In the exercit of his office he enacted several laws, abridging the confular authority, and meliorating the condition of the people; and hence obtained the name of Poplicola, or the people's friend. As a proof of his inte-

VALENIUS, Lucas, an eminent mathematician, acquired great celebrity at Rome as professor of geometry, and was honoured by Galileo with the appellation of the Archimedes of his time. He died in this city in 1618. He profecuted the discovery of the centres of gravity of solids, and shewed how to determine them in all the conoids and spheroids, and their respective forms formed by planes parallel to the bases.

The refult of his investigation was published in 1604, in a work entitled "De Centro Gravitationis Solidorum." He also proposed a quadrature of the parabola different from that of Archimedes. His method was published in 1666, and annexed to the fore-mentioned treatise. Montucla.

VALES, or Royal Bonds, in Commerce, are a kind of paper currency, which was first issued by the Spanish government in the year 1800, for the following sums:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
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<tbody>
<tr>
<td>600 dollars</td>
<td>= 9235 reals 10 maravedis vellon</td>
</tr>
<tr>
<td>300 ditto</td>
<td>= 4517 ditto 22 ditto</td>
</tr>
<tr>
<td>150 ditto</td>
<td>= 2258 ditto 28 ditto</td>
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These bonds are transferrable only by indorsement: they bear an interest of 4 per cent. per annum, and were made a legal tender for their full amount, with any interest that might be due upon them; but, from various caufes, they have experienced a considerable depreciation. Kelly's Un. Cambift.

VALESIANS, VALESIUS, in Ecclesiological History, ancient fectaries, so called from one Valēsius, a peron un-known to Epiphanius, who, however, makes mention of this feet, Hær. 58. though he owns he knew but very little of them; only this, that they admitted none into their society but eunuchs; at last, if any were admitted before castration, they obliged them not to eat any meat till the operation was performed. For then, being no longer subject to the motions of the flesh, they allowed them to eat any kind of meats. Whilton says of them, that they sprung up about the year 240, and that they rejected the law and the prophets.

VALESIUS, in Biography. See Valois.

VALESTRA, in Geography, a town of Italy, in the department of the Panaro; 12 miles S.W. of Modena.

VALET, or VALECT, a French term, anciently written varlet.
In France, valet is a common name for all domestic servants employed in the lower and more servile offices; including what we call groom, footmen, coachmen, bailiffs, &c. But the word is not used among us in this sense, nor any otherwise than in the phrase valet de chambre; which is a servant, whose office is to dress and undress his master, to look to his bed-chamber, wait on him at table, &c. the same with what we otherwise call his gentleman.

In the History of Lewis XII. by Seifel, we always find valet de chambre du roi, valet de la gard-robe, &c. But valetes, like known, and divers other words, is now degenerated into a term of reproach.

Valet, valett, vaulet, and valet, Camden observes, were ancienly used at our court for a gentleman of the privy-chamber.

Selden, in his Titles, relates, that valets anciently signified young gentlemen, and heirs of great estate and quality; especially such as were to be knighted.

In the accounts of the Inner Temple, valet is used for a benchers clerk, or servant. The butlers of the house still call them varlets.

Valet, in the Manges, a flieck armed at one end with a blunted point of iron, to prick and aid a leaping horse.

Formerly, a valet was called aiguillon, i.e. goad, and some of them had four-rows upon them, only the points beaten down; and when a horse was first begun round a pillar, without a rider, they used to prick his flanks with the valet, to make him know the spur, and obey it, without resisting. At present the valet is not used for that purpose, and the name of goad is suppressed, as being only proper for oxen.

VALETTA, or CITTA Nuova, in Geography, a city of Malta, and capital of the island, which, in the year 1566, was built by the grand-master Frederic John de Valette, on a hill, in form like a neck of land extending itself into the sea, and was called by his name. Its walls are of large square stones, dug out of the rock, and planted with several batteries. On the point towards the sea stands the castle of St. Elmo, a fortres which defends both the harbours; one of which, called Marfa Mafcletto, lies at the entrance from the sea to the right of the town, and incloses a small island, on which stands both a fort and a lazaretto. The other harbour, on the left side, is simply called Marfa, or The Great Harbour, being the largest, safest, and most commodious in this island, and having some bays. Its entrance, besides the castle of St. Elmo, is guarded by Fort Riccioli, which stands on the Punta del Orfa, to the left. The town of Valetta lies on its right, and on its left the towns Il Borgo, or Vittoriafia, and Senglea. In Valetta is a handsome palace, where the grand-master resides, and before it a spacious area for exercises. Each of the seven nations, or tongues of this order, has its peculiar hall. The principal church is dedicated to St. John the Baptist. The Jesuits had a college here; besides which are several convents and nunneries, a large hospital, and a building where Turkish slaves are kept. The number of the inhabitants is computed to be about 2000. See MALTA.


VALETUDINAR, VALETUDINARIUS, a term sometimes used by the writers on medicine, for a person of a weak, sickly constitution, who is very frequently out of order, &c.

Dr. Cheyne, by all means, directs the weakly, the fluxious, the sedentary, and the valetudinary, to a low, spare diet.

VALEUR des Notes, Fr.; Value of Notes, in Music. Besides the position of the notes on the staff, which fix the tone with respect to gravity and acuteness, they have all some peculiarity of figure, which marks their duration as to time, or comparative value as to length. In the ancient primitive time-table, in which all the notes are black or full, except the semibreve and minim, which are white and open, the shorthest notes then in use are the longest now, and all that are open. The breve, indeed, equal to two semibreves, is still to be found in church-music of some antiquity, known by the titles alla breve, or à capella; but in all secular music, the semibreve is placed at the head of the other characters for time; and that note, divided into its aliquot parts, furnishes all the fractions in the most rapid compositions.

The dual measure, or common time, is governed by even numbers; as 2 minims, 4 crotchets, 8 quavers, 16 semiquavers, 32 demisemiquavers, all which only amount to a semibreve.

Triple time, or ternary measure, is governed by the number 3; as ; ; ; ; . In these numbers, the upper figure tells how many notes there are in each bar, and the under, of what kind in the time-table; as ; implies 3 minims, ; three crotchets, ; three quavers.

One-third is added to the value of a note by a point or dot: as a semibreve equal to two minims, by a point is equal to three; a minim equal to two crotchets, the point makes equal to three, &c. See Musical Characters, Time, and Plate Time-table.

It was to John de Muris, who flourished about the year 1330, that the characters for time in music were long ascribed; but on examining and collating MSS. in the several great libraries of Europe, it has been clearly proved that it was not John de Muris who invented the characters, as he himself owns in one of his tracts, but Magister Franco de Collign, author of a treatise "De Musica Menfurabilis," written in the eleventh century, long before De Muris was born; in which the form of the notes is given, and their relative value explained.

This very scarce treatise is preferred in the Bodleian library. 842, f. 40. See FRANCO and DE MURIS.

VALEY ISLAND, in Geography, a small island in the North sea, separated by a strait called Valet Sound, from the south-west coast of the island of Shetland. N. lat. 60° 15'. W. long. 1° 58'.

VALFROICOUR, a town of France, in the department of the Volges; 6 miles S. of Mirecourt.

VALGI. When the legs were deformed in such a manner that the feet were twisted outwards, the perons thus disfigured were termed valgi; while others, who were deformed by an inclination of their toes inward, received the appellation of vari.

VALGOM, in Geography, a town of the island of Ceylon; 6 miles N. of Candy.

VALGOREGE, a town of France, in the department of the Ardèche; 9 miles N.W. of Largentiere.

VALGRANA, a town of France, in the department of the Stura, 9 miles W. of Cont.

VALHERMOSA, a town of Portugal, in the province of Estremadura; 9 miles N.E. of Leyria.—Alsó, a town on the north-west of the island of Gomera.—Alsó, a town of Spain, in New Castle; 12 miles E.S.E. of Guadalajara.

VALI, in the mythological romances of the Hindoos, is a name given to a monkey, begotten by their god Indra, on
on a damsel of the semi-feral tribe, called Upbara. We
may just notice, that this warlike monkey was killed by
the Great Rama, the hero of the extraordinary poem Ramayana.

VALLAM, in Geography, a small Russian island, in the
Lake Ladoga; 92 miles N. of Petersburg.

VALLIANO, a town of Etruria; 10 miles S.S.W. of
Cortona.

VALID, a term applied to acts, transactions, expendi-
tions, &c. which are clothed in all the formalities requisite
to their being put into execution, and to their being ad-
mitted to a court of justice.

A contract by a minor is not valid, or is invalid: a mar-
rriage is not valid, unless performed with the solemnities
enjoined.

VALIERO, Agostino, in Biography, a celebrated pre-
late of the church of Rome and a voluminous writer, was
born of a noble family at Venice in 1531. Having studied
both at Venice and Padua, with a view to the ecclesiastical
profession, he graduated both in theology and canon law.
In 1558, having previously been employed in several public
offices, he became professor of moral philosophy at Venice,
which post he occupied till the year 1565, when he was elected
successor to his uncle as bishop of Verona, and he presided over
that fee for forty-one years. In 1583 he was created a cardinal
by Gregory XIII. Through the whole of his life, which terminated at Rome in 1606, in the 75th year of his age, he distinguished himself as the patron and promoter
of literature, as well as by his zeal, charity, and munificence.
The catalogue of his writings includes one hundred and
twenty-eight. Of those that were printed, many being in
MS., the most important are, "De Acolytorum Disciplina;" "De
Rhetorica Ecclesiastica;" "Epistolographia, seu de Op-
timo Episcopi formæ;" "Cardinalis, i.e. de Optima Cardi-
nalis formà;" "De recta philosophandi ratione;" "De
Cautione adhibras in edendis libris." That his sentiments
were liberal for the time in which he lived, appears from his
treatise designed to prove that comets are not prefigurations
of calamities, and from another against the barbarism of
the scholastics. He also wrote on the order and connection
of the sciences and arts, and a large work on the Venetian his-

VALIGA, a name given by some medical writers to an
infusion or tincture of jalap in spirit of wine, or spirit of
citron, with the addition of a little saffron.

VALIMONT, in Geography, a town of France, in the
department of the Moiselle; 8 miles N.W. of Morhange.

VALLINCOURT, John-Baptist du Troustet de, in
Biography, was born of a noble family at St. Quentin, in
Picardy, in 1653, educated at the Jesuits' college in Paris,
distinguished himself as a man of letters. In 1685 he
was appointed, by the count of Toulouf, admiral of France,
his secretary-general, and afterwards secretary of the marine;
but through life he cultivated polite literature, and became
a member of the French Academy in the room of Racine,
an honorary member of that of Sciences, and an associate of
the Academy della Caffica. He succeeded Racine as joint-
historiographer with Boileau; but his labours on the reign
of Louis XIV. were confounded with his library in 1725, a
loft which he bore with philosophical composure, observing
to one of his consofing friends, "I should little have profited
by my books, if I had not learned how to lose them." He
was an active promoter of literature and a protector of
learned men, who had always free access to his house; and
his character was distinguished by probity, sincerity and
good sense. He was held in such estimation, that Boileau
dedicated to him his satire on True and False Honour. His
time was so much occupied, that his writings are few; they
confult of a critique on the celebrated novel of "The Prince-
of Cleves;" "A Life of Francis Duke of Guise, surnamed
Le Balafre;" "Critical Observations on the Ædipus of
Sophocles," and a few poems. Such was his regard for
religion, that towards the close of life, he held several
conferences with ecclesiastics, for the purpose of terminating
the divisions of the church with respect to the bull Unigeni-
tus. He died at Paris, generally esteemed, in 1730, aged
fifty-seven years. Moreri.

VALINSAY, in Geography, a town on the W. coast of
the island of Loon. N. lat. 16° 18'. E. long. 120° 6'.

VALLIODA, a town of Hindooftan; 15 miles E.N.E. of
Travancore.

VALLJOVA, a town of European Turkey, in the pro-
vince of Servia; 50 miles N. of Jemibafar.

VALLISQUERVILLE, a town of France, in the depart-
ment of the Lower Seine; 6 miles N.N.W. of Cauderbec.

VALIZ. See BALIZE.

VARK, a town of Russia, in the government of Riga;
72 miles N.E. of Riga. N. lat. 57° 50'. E. long. 25° 44'.

VALKI, a town of Russia, in the government of Chark-
ow; 16 miles S.W. of Charkow. N. lat. 49° 36'. E.
long. 35° 44'.

VALKENBURG. See FAUQUEMONTE.

VALKOVAR, or Barkevar, or Valkö, a town of
Selovia, near the right bank of the Drave; 15 miles S.E.
of Ezececk.

VAL, or VALE, in Commerce, a weight for gold and
silver at Bombay and Surat. See TOLI.

VAL, in Geography, a town of Sweden, in Warmeland;
28 miles E.S.E. of Carlstadt.

VALLA, Giorgio, in Biography, a native of Piacenza,
and professor of polite literature in the university of Pavia
in 1471 and 1476, from which he removed to the chair of
eloquence at Venice in 1486. As he was one morning pre-
paring to go to his school, where he explained Cicero's
Tusculan Questions, and held daily disputations on the
immortality of the soul, he died suddenly at the close of
the 15th century. He was the author of many works, which
are for the most part collections and transcripts from ancient
writers, and translations from Greek authors, useful in that
age, but not distinguished by judgment or accuracy.

Bayle.

VALLA, Lorenzo, was probably a relation of the pre-
ceding Valla, and born at Rome, as it has been said, in the
year 1415, but as Tiraboschi says, before the year 1406.
He was educated in his native city, and continued there till
his twenty-fourth year. Having visited Piacenza to take
possession of the inheritance bequeathed to him by his rela-
tions, he settled at Pavia as professor of eloquence in the
university. Here he was chargable with some influences
of misconduct, so that he changed his abode several times,
till he became attached to Alphonso, king of Naples, in
which city he resided for some time; but in 1455, on the
return of pope Eugenius to Rome, he settled in that city.
Investi-
gating the pretended donation of Constantinople to the holy
feet, which he discredited, and reflecting on the characters
of several popes, he incurred the displeasure of Eugenius,
and found it necessary to withdraw first to Oltia, then to
Naples, and finally to Barcelona. From hence he ad-
ressed an apology to the pope, and a defence of his writings
on moral philosophy and dialectics, without any reference to
Constantine's donation. He afterwards returned to Naples
under the protection of Alphonso, and there opened a
school of eloquence, to which many scholars repaired; but
notwithstanding his popularity as a teacher, he was accused
and brought into danger on account of the freedom with
which
which he maintained his peculiar opinions. Of these, we may mention his rejection of the letter of Chrifi to Abgarus as a fiction, and his reproach of a celebrated preacher for asserting that each article in the apostles' creed was composed by one of them separately. For the latter of these offences he was brought before the Inquisition, and owed his escape from the interposition of Alphonfo, after a private flagellation in the cloister of monks. At length, he was invited to Rome by pope Nicholas V., who was distinguished by his patronage of literature; and in this metropolis he opened a school of eloquence, A.D. 1450. Here he entered into a dispute with George of Trebifond, secretary to the pope, on the respective merits of Cicero and Quintilian, to the latter of whom he gave a decided preference. His next conflict was with Poggio Bracilini, who attacked him in five invectives, to which Valla opposed as many antidotes, or dialogues, against Poggio. The manner in which this literary conflict was prosecuted was disgraceful to both parties, and has been severely condemned by Tiraboschi. Although Valla was much occupied with disputes of this kind, he pursued his studies, and by order of Nicholas V., undertook a version of the Greek of Thucydides into Latin, for which he received from the pope a recompense of 500 gold crowns, a canonry of St. John Lateran, and the place of apostolic scribe. For these favours on the part of the pope, Valla is charged with ingratitude. In the latter years of his life he visited King Alphonfo at Naples, who exhorted him to translate Herodotus, but his death prevented his finishing the proposed version; however, for the part which he completed he was liberally rewarded. This translation was concluded by another person, and dedicated to Pius II. Valla's death occurred in August, 1457. The character of Valla is thus sketched by one of his biographers. He was a man confident of his talents and acquirements, intolerant of other men's opinions, and free in his own, arrogant and contentious. His conduct was probably far from correct, though his enemies may have brought false and exaggerated charges against him. His philosophy was professedly Epicurean, placing the highest good in pleasure, which, however, he might explain in the least obnoxious sense. He was never married, but he confided in one of his answers to Poggio, that he took a young woman to live with him, by whom he had three children, and whose fidelity to himself he extols, adding, that he hoped to procure for her a husband; but concubinage was at that time very common among the scholars attached to the court of Rome. In the capacity of a reviser of letters he has always held a high rank, which he merited by unwearied application, and an enlarged course of study, comprehending history, criticism, dialectics, moral philosophy, and theology. That in the latter his notions were liberal, may be conjectured from some of the circumstances above related, and also from his notes on the New Testament, in which he was one of the first to consider the sense as a critic rather than as a divine, whence he was led to make many corrections in the received translations. He is however said to have been but moderately versed in the Greek language, and Huet speaks very disparagingly of his versions of Thucydides, Herodotus, and Homer's Iliad. Of his numerous writings, his 'Elegantiae Latinae Sermonum, containing the grammar of that tongue, and rules for composing in it, has been the most generally esteemed, and still retains its reputation: his own style, however, was defective in point of purity and elegance. He had has many eulogists among the learned, and has been particularly praised by Erasmus, as one of those who have most contributed to the revival of true learning." -- Tiraboschi. Gen. Biog.

VALLABREGUES, in Geography, a town of France, Vol. XXXVI.

VALLADOLID, a town of Spain, in the province of Leon, on a small river called Eiquava, near the Pifnera; the site of a bishop, and an university, founded in the year 1346. Several of the churches of Valladolid, those especially of the Dominicans and of San Benito, are elegant, agreeably to the Spanish taste, that is handloom, and full of altars richly gilt. Valladolid is not wholly without manufactures; some stuff and coarse cloths are made there from the wool of the sheep which are kept in the neighbourhood. There are also gold and silver-smiths; and one store is entirely inhabited by jewellers: this is very lively, and full of business, as are all the others, which terminate in the great square. An academy of the belles lettres was established here in the year 1752. Here was a palace, in which Philip II. was born, now reduced to bare walls; 84 miles N.N.W. of Madrid. N. lat. 41° 42'. W. long. 4° 47'

VALLADOLID, a town of South America, in the audience of Quito; 40 miles S. of Loza.—Alfo, a town of Mexico, in Yucatan. N. lat. 19° 50'. W. long. 68° 5'.

VALLADOLID, or Comapagua, a town of Mexico, in the province of Honduras; the site of a bishop, who takes the title of bishop of Honduras. N. lat. 14° 30'. W. long. 88° 19'.

VALLADOLID. See Mechoacan.

VALLAGAM, a town of Hindoostan, in Golconda; 21 miles S. of Combatem.

VALLAIS. See Valla.

VALLENCE, a town of France, in the department of the Gers; 4 miles S. of Condom.

VALLAR, Vallaris, formed from wallum, a flake with branches, of which they made the palisade of a camp, called lorica, in Antiquity, an epithet given to a kind of crown, which the Roman generals bestowed on him who, in attacking the enemy's camp, first broke in upon the line of palisades.

The corona vallaris was the name with what was otherwise called corona caesariana, from caesare, a camp. Aulus Gallius assures us, that it was of gold, as the mural and naval crowns also were: yet, though they were made of that precious metal, they were not the most valued; for Pliny, lib. xxxiii. cap. 3, gives the preference to the corona obductionis, which was yet only of gramin, or grats. See Crown.

VALLARIOS, in Geography, a town of Spain, in Aragon; 15 miles W. of Balbipro.

VALLARIS, in Botany, so called by Burmann, apparently from walla, to incline, because it serves in Java and Ambonza, to make bowers and fences, whose shade is very grateful in a tropical climate.—Burman, Ind. 51. Brown Tr. of Wern. Soc. vol. 1. 63.—Cliffs and order, Pentandria Manyporia. Nat. Ord. Conteria, Linn. Aponeare, Cliff.

Eff. Ch. Corolla salver-shaped; mouth and tube perivious, without scales; limb in five obtuse segments. Stamens prominent; filaments inserted into the throat, very short, with a fleshy tubercle externally, at the top; anthers arrow-shaped, adhering to the stigma. Germs of two cells; style thread-shaped; stigma conic-ovate. Scales at the base of the germs five, combined below, fringed at the points. Follicles . . . .

Obf. Mr. Brown remarks, that "this, the Flos Pergularis of Rumphius, was considered by Linnaeus as the first species of his genus Pergularia." It does not, however, belong to the same order with the plant that afforded his generic
neric character, and to which the name has been since generally applied. See Perigalaria.

1. V. Pergulanus. Sweet Bower-vine. Burm. Ind. 51. (Flores pergulanus; Rumph. Amboin. v. 6. book 7. 51. t. 29. f. 2.) Carack nachi of the Malays. Pergalaria glabra; Linn. Mant. 53. Willd. Sp. Pl. v. 1. 1247.)—This, the only known species, is a native of Java and Ambonya, used for bowers and trellis-work, as it makes a very thick shade. The Malay women are fond of adorning their hair with its fragrant flowers. The stem is perennial, shrubby and twining. Leaves opposite, stalked, ovate, acute, entire, thick and shining, five inches long, two and a half or three wide, with strong pale veins. When the leaves or twigs are wounded, they discharge a thick, viscid, yellow milk. Flower-stalks, from between the footstalks, forked, corymbose. Flowers white, and highly fragrant, compared by Rumphius to those of jasminum, (probably Jasminum Sambac,) but having a shorter tube, with five shining bodies in the middle. He speaks of the scent of these flowers as too strong for Europeans, though highly esteemed by the natives of the country where they grow.

Valle, Pietro Della, in Biography, a Roman patrician, who, in the year 1614, commenced his travels into Egypt, Turkey, Persia, and India. At Bagdat he fell in love with a young female of the Maronite sect of Christians, and married her. She accompanied him in his journey, and on his return towards Italy, she died near the Persian gulf. The loss so much affected him, that he had her remains embalmed, and carried them with him during his subsequent travels, and on his return to Rome, they were magnificently interred in the church of Ara Coeli; and he himself pronounced her funeral eulogy, which was printed. The account of his travels, written by himself in Italian, and contained in fifty-four letters, was published at Rome in 1650. They have been often cited as authority, though not deficient of marks of credulity, and still bear a respectable rank among books of travels. The style is pure and elegant, though the narration is prolix. Doni has spoken of him in terms of high commendation, and represents him as well acquainted with the Oriental languages, and with music. He wrote on other subjects besides his travels, and was a member of the Academy degli Umoristi. His second wife was a Georgian, attached to his first wife, and the companion of his travels.

Moreri.

For the opinion of this agreeable writer concerning the music of his own times, we refer to the article Opera, inserting here his account of the manner in which the first opera, or musical drama, was exhibited at Rome, which is extremely amusing and curious. "Though no more than five voices, or five instruments, were employed, the exact number which an ambulant cart could contain, yet this afforded great variety: as, besides the dialogue of single voices, sometimes two, or three, and, at last, all the five fung together, which had an admirable effect. The music of this piece, as may be seen in the copies of it that were afterwards printed, though dramatic, was not all in simple recitative, which would have been tiresome, but ornamented with beautiful palliages, and movements in measure, without deviating however from the true theatrical style; on which account it pleased extremely, as was manifest from the prodigious concourse of people it drew after it, who, so far from being tired, heard it performed five or six several times; there were some even who continued to follow our cart to ten or twelve different places where it flopped, and who never quitted us as long as we remained in the street, which was from four o'clock in the evening till after midnight."

This narration seems to furnish a curious circumstance to

the history of the stage, which is, that the first opera, or musical drama, performed in modern Rome, like the first tragedy in ancient Greece, was exhibited in a cart. It has been imagined by many of the learned, that the recitative in modern operas is a revival of that species of melos in which ancient dramas were sung; and here the moveable stage on which it was performed, like that used by Thespis at Athens, furnishes another resemblance.

"—Plautus versus, Poemata Thespis."—Hor.

Della Valle, after having proved that the singing of his time was better, and the compositions more varied, more rational, and amiable to poetry, than the more ancient, proceeds to speak of instrumental music; and after discriminating the different kinds of playing on an instrument, in a solo, in a full piece, in accompanying a voice, or leading a band; he says, he must agree with his friend, that solo playing, however exquisite and refined, at length tires; and that it had frequently happened to organists of the highest class, when loll and immered in carrying on a happy subject of voluntary, to be silenced by a bell; which never happened to fingers, who, when they leave off, diffuse the congregation or audience, to whom their performance seems always too short.

After discussing instrumental music, he comes to singing, and this he considers in solosongs, and in music of many parts. His friend, among the sopranos, or treble voices, of his youth, had greatly prized the falcelli, which used to sing in the pope's chapel, and elsewhere; and Della Valle says he remembered one of them, Gio. Luca Falletto, who had great execution, and went up to the clouds; and mentions Orozzietto, a very good finger, either in a sfallet or tenor; Ottavincello and Verovio, famous tenors, who all three sang in his cart. "However, he," he adds, "trills, graces, and a good partimento, or direction of voice, excepted, were extremely deficient in the other requisites of good singing; such as piano and forte, swelling and diminishing the voice by minute degrees, expression, afflicting the poet in fortifying the sense and passion of the words, rendering the tone of voice cheerful, pathetic, tender, bold, or gentle at pleasure; these, with other embellishments in which fingers of the present times excel, were never talked of even at Rome, till Emilio del Cavaliere, in his old age, gave a good specimen of them from the Florentine school, in his oratorio, at the Chiesa Nuova, at which I was myself, when very young, present."

What follows is extremely curious and satisfactory concerning a delicate point of musical history, which is, the first establishment of recitative in the pope's chapel, and the use of them in early operas.

It is astonishing how much sooner Della Valle got rid of the pedantry of the then old school, than any of his contemporaries. He manifests as much good taste in his reflections on imitative and dramatic music, as any writer of the last century.

Della Valle's biographers seem to have known nothing of the correspondence with Guidiccioni, or of his skill and good taste in music. This agreeable and intelligent traveller died in 1652, aged 66.

Valle, in Geography, a town of Norway, in the province of Christianland; 16 miles S.W. of Christianland.

—Allo, a town of Norway, in the province of Christianland; 44 miles N. of Christianland.—Allo, a town of Thrilis, and chief place of a district; 8 miles N. of Pola. N. lat. 45° 9'. E. long. 13° 57'.—Allo, a town of Italy, in the department of the Adda and Oglio; 8 miles N.N.E.
of Breno. — Alto, a town of Italy, in the department of the Gogna; 5 miles W. of Lumello. N. lat. 45° 8' E. long. 8° 40'.

Valle Calamuchita, a town of South America, in the province of Tucuman; 40 miles N.E. of St. Louis.

Valle Rayas, a town of the island of Corfica, in the district of La Porta.

Valle di Spagna, a town on the east coast of the island of Cephalonia.

Valle, in Botany, owes its name to Mutis, who sent the plant to Linnaeus. In the Supplementum it is said to commemorate a person named Valle, "praefato by Allioni." No one having vouchsafed to indicate where this praefer is bestowed, and De Theis having transferred the honour of the present genus, with true French patriotism, to one of his own countrymen, Robert Valle, of Rouen, who published, in 1746, some Commentaries upon Pliny, we have thought it necessary to inquire into the matter; especially as the genus is well worth claiming. In a note to Allioni's Rarioh Pedemontii Stirpiurn, Specimen primum, page 23, the mystery is unravelled, by a narrative, of which the following is the substance. Dr. Valle, a physician of Turin, a botanist of no common merit, after having attentively investigated the plants around that city, and those of the neighbouring alps, was led by an ardent love of botany, and other branches of natural history, to procure, in 1746, the appointment of physician to the army in Corfica, in order to examine the productions of that country. There he made ample collections of plants, seeds, flowers, insects, and other things worthy of notice. But being more anxious to acquire knowledge than to take care of himself, the heat of the climate threw him into a violent fever, which carried him off in three days. His dried he was Corfican plants, falling into the barbarous hands of ignorant people, were all destroyed. Whatever his friend Allioni could meet with, by the affection of the family, he purchased; and thus became possessed of numerous specimens, gathered by Dr. Valle, about Savona, as well as in various parts of the Alps, of which he had drawn up a description, after Tournefort's folium; but this was completed no further than the first four classes. The name of Valle therefore desires to be embalmed with those of Bartich, Borone, Lippi, and other premature martyrs to botany, who have justly been thought worthy of such an enduring memorial. — Linn. Suppl. 42. Sehreb. Gen. 363. Willd. Sp. Pl. v. 2. 1212. Jull: 434. Poiret in Lam. Dict. v. 8. 318. — Ch. Linn. Polyandria Monegynia. Nat. Ord. Tiliaceae. Jull: 666.

Gen. Ch. Cal. Perianth inferior, of one leaf, in four or five deep, ovate, flirated, coloured, deciduous segments. Cor. Petals four or five, white, obovate, three-cleft, rather larger than the calyx. Nectary a flattish, undulated, shining, coloured border, under the ceraon. Stam. Filaments numerous, 30—40, awl-shaped, flattened, coloured, incurved, shorter than the calyx, inserted into the receptacle, beneath the nectary; anthers linear, erect, with two pores at the summit. Ptil. Germen superior, ovate; style nearly cylindrical, as long as the calyx; stigma four or five slender divisions. Peric. Capsule with four or five angles and as many valves, each valve appropriated to two cells. Seeds several.

Eff. Ch. Calyx in four or five deep segments, inferior. Petals four or five, three-cleft. Stigmas four or five. Capsule with four or five valves, as many as cells, and several seeds.

1. V. filipulac. Linn. Suppl. 266. Willd. n. 1. — Native of the colder parts of New Granada. A tree, twelve feet high, with round, flirated, leafy, hairy branches. Leaves alternate, on hairy stalks an inch long, spreading, simple, heart-shaped, acute, entire, two or three inches long and half as broad, fingle-ribbed, beautifully reticulated with innumerable veins; smooth and shining above; paler, clothed with flabby tawny hairs, especially about the rib and larger veins, beneath. Stipulae rather large, leafy, kidney-shaped, entire, flirated, in pairs at the base of each footstalk, and clasping the stem above it. Flowers blood-red, near an inch in diameter, in forked, cymose, hairy, axillary, and terminal panicule, shorter than the leaves.— Linnaeus cites Mutis, Amer. v. '7. 10, by which botanists have been led to understand, that Mutis had published an important work on American plants, extending to seven volumes, at leaf. But in fact no such work exists. The reference is, in every point, erroneous, and alludes merely to a collection of thirty-two Indian ink drawings of Mexican plants, sent by that learned Spaniard, with numerous dried specimens, to Linnaeus. (See Mutis.) From his drawing of the Vallea, compared with the specimen, we have, as our readers may observe, ventured to correct some part of the generic characters. By that drawing the "colulbula" appears to have four valves, sometimes, it seems, varying to five, each of which has indented edges, besides a central partition; and these, all meeting at a central column, may easily be conceived to form a "capsule of eight or ten cells," explaining the strange expression in the Supplementum, of "biloculibicoloribus." Several circumstances indicate the affinity we have hinted above, of this genus, to Jussieu's Thiasae; see that article.

Vallefreda, in Geography, a town of Naples, in Lavora; 8 miles N.W. of News.

Vallelonga, a town of Italy, in Calabria Ultra; 18 miles E.N.E. of Nicolarea.

Valleoley, a town of France, in the department of the Indre; 21 miles N. of Chateaurolx. N. lat. 47° 10' E. long. 1° 38'.

Valleynen, or Valleen. See Valenno.

Vallerauche, a town of France, in the department of the Gard; 6 miles N. of Le Vigan.

Valle, a town of France, in the department of the Indre and Loire; 12 miles W.S.W. of Tours.


Gen. Ch. Cal. Perianth inferior, small, of one leaf, in five acute segments. Cor. of one petal, funnel-shaped; tube much longer than the calyx, swelling upwards; limb flat, in five ovate, equal, spreading segments. Stam. Filaments five, very short, inserted into the upper part of the tube; anthers arrow-shaped, in the mouth of the corolla. Ptil. Germen superior, ovate, cloven; style thread-shaped, as long as the tube of the corolla; stigma obtuse. Peric. Drupes two, ovulate, obtuse, disarticulated, of one cell. Seed. Nut solitary, oval, woolly, fibrous, flattened, with a solitary kernel.


1. V. filipulac. Linn. Suppl. 266. Willd. n. 1. — Native of the colder parts of New Granada. A tree, twelve feet high, with round, flirated, leafy, hairy branches. Leaves alternate, on hairy stalks an inch long, spreading, simple,
lanceolate, acute, entire, smooth, thinning, single-ribbed, two or three inches long and one broad. *Parnices or cyrnus* small, forked, opposite to the leaves. *Flowers* small, white. *Fruit* whitish. *Poirier, after the Fl. Pers."

**VALLEY,** in Geography, a town of France, in the department of the Lower Loire; 12 miles E. of Nantes.

VALLEY, in Natural History and Geology, is a tract of ground bordered by hills or mountains on two opposite sides, between which it extends in a straight or waving line. If the valley be short, and the length is not much greater than the breadth, it is called an opening, or pafs, through a mountain or chain of mountains.

Large valleys have generally a number of small valleys joining them, like branches to a main trunk. In almost every valley there is either a lake or a river, and the magnitude of the river bears some proportion to the valley. The lower end of a valley, where the river empties itself into a larger river or lake, or into the sea, is generally much broader than its upper or higher end. Some valleys are nearly closed at each end, forming elliptical hollows in mountainous districts. Such valleys have once been lakes, but the water having worn itself a passage at the lower end, has reduced the lake to a small stream in the middle, or the lakes have been filled up by the debris from the adjoining mountains.

Sauflure divides valleys into two orders, which he calls *longitudinal valleys* and *transversal valleys.* Grand mountain chains are commonly formed of many ranges of mountains running parallel to the highest or central range, each range diminishing in height as its distance from the central range increases. It is between these parallel ranges that longitudinal valleys are situated. Sauflure cites the valley of the Rhone as a striking example of this kind of valley.

Transversal valleys are those openings which communicate between the longitudinal valleys, either at right angles with them, or obliquely. It is observed by Patrin, that the transversal valleys which cut through the central range of mountains, are sometimes nearly horizontal, at least for a short distance; but those which cut the collateral chains have always a more or less rapid descent; and as they are frequently excavations formed by water-courses, they sometimes present corresponding fan-like and retiring sides, like the valleys in secondary mountains; but it is evident that this effect is accidental.

One of the essential characters of longitudinal valleys is, that their direction is parallel with the line of bearing, or range of the beds of which the mountains are composed. Transversal valleys cut through the beds in the direction of their line of dip or inclination. See Plate II. Geology, fig. 2, in which the side of the mountain fronting a represents the beds of a mountain in their line of bearing; and a spectator placed at the flat a, may be supposed to be placed in a longitudinal valley, in which the edges of each bed in the opposite mountain would appear to range horizontally. The same appearance would present itself to the spectator placed at B, fig. 5. A transversal valley cutting through the beds at right angles to the former, would show the true dip or inclination of each bed to a spectator placed at B in the former fig. 2. The side E of the mountain represents the direction of a longitudinal valley, the side G, the direction of a transversal valley.

The Alps present many longitudinal valleys. The valleys in the Pyrenees are transversal. This difference has been supposed to arise from the central parts of the Pyrenees ascending more precipitously above the lower beds; hence the waters, falling with great impetuosity, have cut passages through the lower beds in direct lines, and taken the shortest course to the plains below.

In the Alps, the currents, being less violent, have followed the course of the longitudinal valleys, which had been traced out by nature in the original formation of those mountains.

Some mountain groups are disposed in forms nearly circular, so as to include great tracts of flat country, as is the case with Swabia, Hungary, Transylvania, &c. Those circular bays or valleys have formed lakes, when the relative level of the ocean was much higher than at present; and on inspecting the belt maps, where the inequalities of the surface are delineated, we may be led to suppose that a considerable part of Europe has once been covered by these lakes, the present mountain chains forming the boundaries.

The Rhone and the Rhine pass through several smaller circular valleys in their course; and the river Don, in Aberdeenshire, has its course through valleys of this kind. At the mouth of the Don, the rocks confine it to a narrow channel, and give it an aspect which would convey the idea of its flowing through a mountainous and rugged country, where no space was left for forming even a commodious road along its banks; but on ascending it for about one mile, the hills recede on either side to a great distance; then it closes again; and after another temporary confinement among rocks, hills, and woods, its waters once more open into another plain of great extent. Such is the general character of this river.

The Danube, whose history has been so well illustrated by the count de Marigli, has its source in the mountains of Swabia, from whence it passes through Swabia, Bavaria, Austria, Hungary, and Walachia, into the Black sea. Swabia is a great circular valley, from which the Danube escapes by a narrow opening into Bavaria: during its progress through Bavaria, it passes through several circular valleys into Lower Austria, which is also a circular valley. It flows through Austria, and at Presburg, where the valley is nearly shut up, it forces its way through rocks and hills into Hungary, which is one of the most extensive circular valleys in Europe. At the lower extremity of Hungary, the river is again forced to seek its way through a narrow rocky channel to Orfova, which is the only opening between Hungary and Walachia. It now continues its course through Walachia, and at length falls into the Black sea. We have a continuation of this chain of valleys, although filled with water, in the Black sea, the sea of Marmora, and the Mediterranean.

The valley of Cashmere presents one of the most striking examples of a circular basin or valley, containing a small lake, which has probably once filled a considerable part of the great cavity formed by the surrounding mountains. "This happy valley," says Mr. Pennant, "this Hindoostan paradise of the Indian poets, is of an oval form, about eighty miles long, and forty broad, and is supposed to have been once entirely filled with water, which having burst its mound, left the vale nourished to the most dilatant ages by the fertilizing mud of the river, which fed its expanse. This delicious spot is surrounded by mountains of vast height and rude aspect, covered with snow, and enchafted in glaciers, in which this enchanting jewel is firmly set."

The formation of valleys has been by some philosophers ascribed
When the elevation of parts of the earth's surface, and the subsidence of other parts, are also proved by the fractures and dislocations of the strata which mountainous districts almost everywhere present. There are likewise evident marks that the ocean has been thrown suddenly, and with great violence, over our present continents, tearing away and transporting to distant countries various parts of the surface, scooping out hollows in the softer strata, breaking down the boundaries of immense lakes, and thus changing the course of rivers, and opening new valleys where none before existed. Great and sudden risings of the sea have been known to take place in our times, by the agency of subterranean fire operating on a small extent of the globe; and we have only to conceive the fame agent operating more powerfully, to explain the changes which may have taken place from the ocean suddenly rising and sweeping over a large portion of the globe. See System of Geology.

The theory of the formation of valleys by the action of rivers has been supported by Dr. Hutton and professor Playfair. "Every river (says the latter) appears to consist of a main trunk, fed by a variety of branches, each running in a valley proportioned to its size, and all of them together forming a system of valleys communicating with one another, and having such a nice adjustment of the dérivatives, that none of them join the principal valley either in too high or too low a level, a circumstance which would be infinitely improbable, if each of these valleys was not the work of the stream that flows through it. When the usual form of a river is considered, the trunk divided into many branches, and these again subdivided into an infinity of smaller ramifications, it becomes strongly impressed upon the mind, that all these channels have been cut by the waters themselves, and that they have been slowly dug out by the washing and erosion of the land." This is an accurate description of the structure of many valleys, but there are others in which the smaller valleys do not join the larger at the same level, but terminate abruptly, and the rivers which flow through them fall in cascades to the lower valleys. The valley of Watten-lagh, in Cumberland, is a striking instance of this kind. The lower extremity joins the vale of Keswick, in which the lake of that name is situated, but it does not enter it at the same level, but terminates in a precipice between two cliffs, down which the water is thrown, forming the cataract of Lodore, which empties itself into the lake.

Where the corresponding strata on each side of a valley have nearly the same elevation as is represented in Plate III. Geology, fig. 4, it is obvious that the excavation between the opposite hills has been formed by water which has once flowed at a much higher level than at present. Also, where the strata on the opposite sides of a valley have the same angle of inclination with the horizon, (see Plate II. Geology, fig. 5;) we may infer that it has been excavated by water; but where the strata on the sides of a valley dip in an opposite direction, or have a much greater dip on one side than on the other, the original formation of the valley may be attributed to the elevation or subsidence of the strata, forming a fissure through which the water has run, and in the course of ages has worn down and enlarged the passage. Some circular valleys and lakes may have originated in the subsidence of the surface, forming a large cavity, the sides of which are gradually worn down in many parts into gentle slopes. An accurate examination of the true line of dip of the beds, can alone discover to which of these causes the formation of any particular valley can be ascribed; and it is frequently more difficult to ascertain the true angle of inclination than is generally supposed, and still more difficult to determine whether a slight variation in the angle is occasioned by a fracture, or by an original inequality or waving of a stratum.

That lakes are palling to the state of valleys, and that many of the present valleys have been lakes, is obvious to the most common observer who will attend to the appearances which they present. A lake, says professor Playfair, is but a temporary and accidental condition of a river, which is every day approaching its termination; and the truth of this is attested not only by the lakes that have existed, but by those which continue to exit. Where any confderable stream enters a lake, a flat meadow is usually observed increasing from year to year: the foil of this meadow is displaced in horizontal strata; the meadow is terminated by a marsh, which marsh is acquiring solidity, and is soon to be converted into a meadow, as the meadow will be into an arable field. All this while the sediment of the river makes its way slowly into the lake, forming a mound or bank under the surface of the water, with a pretty rapid slope towards the lake. This mound increases by the addition of new earth, mud, and gravel, poured in over the slope, and thus the progress of filling up gradually advances. By an accumulation of vegetable matter in shallow lakes, marshes and peat bogs have been formed at the bottom of valleys where the waters have not flowed with sufficient rapidity to drain away the moisture. These are common in various parts of the Highlands, and in Ireland. The filling up of lakes, and the enlargement of valleys, by the processes above described, may be distinctly seen in the vicinity of the lakes of Cumberland and Westmoreland. Larger lakes exemplify the same processes. Where the Rhone enters the lake of Geneva, the beach has been observed to receive an annual increase; and the Portus Valea, now Prevallais, which is at present half a league from the lake, was formerly close upon its bank. Indeed the sediments of the Rhone appear clearly to have formed the valley through which it runs, to the distance of about three leagues from the place where the river now discharges itself into the lake. The ground there is perfectly horizontal, composed of sand and mud, little raised above the level of the river, and full of marshes. The deposition made by the Rhone, after it enters the lake, is visible to the eye, and may be seen falling down in clouds to the bottom.

Where lakes are situated at a considerable elevation above the sea, or the adjacent country, they may be emptied by the wearing down of the strata which forms the outlet. Many of the North American lakes are connected by small straits or rivers, which have a rapid descent. On some of them are prodigious water-falls, which are constantly enlarging the passage from one to the other, and will ultimately drain the upper lakes. The falls of Niagara are observed to be progressively shortening their distance from the upper lake, since the banks have been inhabited by Europeans; and when it has completed its progress, the upper lake will become an extensive valley, surrounded by rising grounds, and watered by a river or smaller lake, which will occupy the lowest situation.

Valleys constitute the most fertile and habitable parts of almost
almost every country. Their superior fertility is derived from a constant supply of fresh soil, and from natural irrigation, and a more equal temperature; the vegetation being sheltered and protected from the boisterous winds that sweep over extensive plains, and the more elevated parts of the globe. It has been observed, however, that low valleys are not so favourable to the longevity of the human race as dry and mountainous districts.

Valley of Heros, in Geography, a name given to the delightful plains of Oujan, which are said to produce the finest pasture in Persia. It is so called by the natives, from having been formerly the favourite hunting park of the kings and heroes of Iran, and particularly of Bahrâm Gour, who had seven palaces of different colours in the neighbourhood. This prince, passionately devoted to the chase, took his throne of Gour from the gour khur, or wild aows, with which this valley abounds. In one of the roads from Perpoxis to Isfahan there is a pass or defile, called Imam Zada Ilmael, two furfings in length, and commencing at the 38th mile from Perpoxis, which leads into the above-mentioned plains.

Valleys, in Buildings, denote the gutters over the sleepers in the roof of a building.

VALLI, in Ancient Geography, a people of Asia, upon the Gordian mountains, near the Caucasian gates, which were in these mountains, according to Pnyx.

VALLI, in Botany, Juss. Gen. 267. — Rheede Hort. Malab. v. 7. t. 6—11, the name of several East Indian climbing ferns, which Influen confiders as belonging to the genus Vitis, hereafter to be described in its proper place. (Ardia-Valli of the same volume, t. 45, is referred by him to the neighbouring genus Cissus)

VALLI, in Geography, a town of Naples, in Lavora; 12 miles E.S.E. of Capua.

VALLIERE, a town of France, in the department of the Crente; 6 miles S.W. of Aubillon.

VALLIES, Four, Distriét of, otherwise called The District of Pinerolo, a province of Piedmont, bounded on the north by the marquisate of Susa, on the west by France, on the south by the marquisate of Saluzzo, and on the east by Carmagnola. The four vallies are those of Peroufa, Lucerna, St. Martin, and Angroina. The province is about 24 miles long, and from eight to eleven broad. The principal towns are Pinerolo, Lucerna, Peroufa, St. Martin, and Feneitelle. These vallies are watered by the Cluson, and several other smaller rivers; they are all surrounded with mountains and sharp rocks, in which are found white hares, foxes, pheasants, partridges, wolves, and bears; and in the most lofty of the neighbouring alps is found the marmotte, a creature something larger than a rabbit, but more of the nature of the badger; the chamois; and the bouquetin, an animal something like a goat or chamois, but more fleet than either. Among the tame animals is the jumart, produced by a bull and a mare, or a bull and a fheaf. The vallies are fertile in pasturage, and the mountains in fruit, particularly chestnuts. These vallies are celebrated for the cruel persecution of the inhabitants, who were called Waldenfes, on account of their religion, about the year 1655. But now they enjoy in peace the worship they embraced, though they have a Catholic church in each parish. The number of inhabitants is reckoned at about 8000, of whom 7000 are suppofed to be Proftantts.

VALLIS, in Ancient Geography, a town of Africa Propria, upon the route from Carthage to Cirta, between Sicilia and Coreoa, according to Antonine's Itinerary.

VALLIS Acker, Valley of Acker, a valley of Palestime, north of Jericho.

VALLIS Agyas, Valley of Agyas, a valley of Palestime, in the tribe of Dan, between Thammathe and Bethhehem.

VALLIS Artificem, Valley of Craftmen, a valley of Palestime, in the tribe of Benjamin, near Jordan.

VALLIS Aurantis, Valley of Oranges, a valley of Palestime, near the Dead sea.

VALLIS Beneficentiarum, Valley of Bliffsing, a valley of Palestime, in the tribe of Judah, west of the Dead sea.

VALLIS Cariniana, a place of Pannonia, on the route from Sompiane to Aquincum, between Pons Sociorum and Corvin or Gorgium. Anto. Itin.

VALLIS Caudaverum, Valley of Tophef, the slaughter-house of Jerusalem. It lay south of the city, in the valley of the children of Hinnom. It is said, that a fire was constantly kept here for burning the carcases, and other filth, which were brought hither from the city. (IIaiah, xxx. 33.) Others think, that the name of Tophef is given to the valley of Hinnom, on account of the sacrifices offered there to the god Moloch, by beat of drum, to drown the cries of the confuming children; a drum in Hebrew being called topf.

VALLIS Dominiæ, a place of Lower Mafia, upon the route from Atrabium to Nicemia.

VALLIS Gibon, Valley of Gibon, a valley of Palestime, west of Jerusalem, so named from the fountain of Gibon, whose spring is in this place, and runs from west to south.

VALLIS Emona, a town of Judea, in the tribe of Benjamin.

VALLIS Jerusel, a valley of Palestime, having the chain of mount Hermon to the north-east.

VALLIS Illuftris, the Illuftrious Valley, a valley of Palestime, near Sichem. This was the vale or plain of Moreh.

VALLIS Montium, the Valley of Mountains, a name given by the prophet Zachariah to the valleys round about Jerusalem, where the inhabitants of that city took shelter, when the city was besieged by the Romans.

VALLIS Rephaim, or Valley of the Giants, called in Greek the Valley of the Titans, and in the Vulgate, the Valley of the Giants (2 Sam. xxvii. 15.), lay near Jerusalem, and belonged either to the tribe of Judah or that of Benjamin.

VALLIS Sabina, the Valley of Salt or Salt-pits, generally placed in the southern part of Idumæa, S. of the Dead sea, but situated, according to Calmet, in the eastern part of Idumæa, between Tadmor and Bozrah.

VALLIS Sylvestris, the Vale of Woods, a valley of Palestime, in which were situated the cities of Sodom and Gozarah, and where the lake Asphaltites, or the Dead sea, was formed. This was called the vale of Siddim.

VALLIS Tabernaculorum, the Valley of Succoth, or Vale of Tents, lay beyond Jordan, near the city of Succoth. The palmits puts the valley of Succoth for the whole country beyond Jordan.

VALLIS Teninthi, called the Valley of Elah (1 Sam. xvii. 2.), or of the Oak, lay S. of Jerusalem, towards Sochoh and Azekah. The valley of the Terebinths is also a name given to the valley of Mamre, on account of the terebinthus under which Abraham entertained the angels.

VALLIS SNERI, Anthony, in Biography, a celebrated Italian naturalist, was born of a good family, May 3d, 1661, at the cattle of Trefilico, of which his father was governor for the duke of Modena. He was first instructed in the rudiments of the learned languages by the Jesuits, at Modena, and was afterwards taught rhetoric, and the Ariflotelian philosophy, under the fame apfices, at Reggio, where he defended his theses on that subject in 1682. Nevertheless, he began, even at this period, to be dissatisfied with the prevailing lyfleum, which he called a philosophy of words; and having to have a more liberal and enlightened preceptor
preceptor than usual, his attention was directed to natural and experimental philosophy, and the then prevalent hypothesis of Descartes. His tutor Biagi, a Jesuit, had the good sense and honesty to avow, that the philosophy of Aristotle might suit theologians and monks, but that he himself knew many able and distinguished men, at Bologna, and elsewhere, who, so far from being indebted to that great person, never thought of his doctrines but to refute them. Vallisneri therefore removed to Bologna in 1683, and very soon gave up theories and hypotheses for the observation of nature. Here the great Malpighi, to whose particular favour he was recommended by the princes of the house of Este, directed his anatomical enquiries, and from him he received, at his first introduction, a valuable lesson on the presumption of those physicians, who boast of a specific for every disease. The learned and experienced Malpighi, confined to his bed by illness, declared that he was unable to cure his own disorder. A candid confession, which then astonished his hearer; but of the truth of which Vallisneri declared himself subsequently more and more convinced by his own practice of physic, when he found the most boasted specifics daily deceiving his expectations.

The father of the young Vallisneri, himself a doctor of laws, offered his son a choice between law and physic; but his earliest inclinations and inquiries were too much allied to the latter profession to allow of hesitation. An anatomist of animals from his youth, he devoted himself so assiduously to dissections, in the instructive and flourishing school of Bologna, that his health became a sacrifice to his curiosity, and Malpighi was obliged to check the dangerous ardour of his promising pupil. Vallisneri would doubtless have graduated in this famous university, then in its meridian glory; but at the time when this should have taken place, the duke of Modena put forth an edict, prohibiting his subjects from taking degrees, except at Modena or Reggio. Vallisneri chose the latter, and took his doctor's degree in 1694; but in order to study with advantage the necessary sciences of chemistry and botany, as well as to improve himself in practical surgery and physic in the hospitals, he was obliged to return to Bologna; as our doctors of Cambridge or Oxford find it expedient to accomplish themselves in London and Edinburgh. He spent about three years more under the auspices of Malpighi, who at length dimissed this favourite pupil, with the found advice of studying nature, and communicating matters of fact. "Systems," said he, "are ideal and mutable. Observation and experience are solid and unchangeable."

The years 1687 and 1688 were usefully passed at Padua, Venice and Parma, and at length Vallisneri settled as a physician at Reggio. Here he planted a botanic garden, and employed his leisure hours in excursions among the neighbouring mountains; to collect herbs, minerals and petrifications; to observe the strata of the rocks, and the origin or nature of the various mountains; as well as to take the pleasures of the chase, of which he was very fond. The first particular object of investigation to which this ingenious philosopher devoted his attention, was the anatomy of the Silkworm, by which he was led to the study of the metamorphoses and generation of other insects. Malpighi and Redi were his guides; but he soon found, in the intricacies to this new and recondite course of inquiry, that he was able to extend their information, and correct some of their remarks. He gave his discoveries to the world in the form of two Dialogues in Italian, supposed to take place between Pliny and Malpighi, on the arrival of the latter in another world. These brought great reputation to their author, both for the value of their contents, and the elegance of their language and composition. They introduced him to the acquaintance and correspondence of several learned men, engaged in similar studies; amongst others to that of our distinguished Dr. Martin Lister. He was soon afterwards invited to Padua, where he rose successively from one medical professorship to another, till he obtained, in 1711, the first chair of the Theory of Medicine. When Vallisneri first took his place among the teachers of physic in this long-established university, he was well aware of the caution necessary in opening the eyes of the blind, and in teaching the lame to walk. He had already exercised his own powers, and was a proficient in the practical, or experimental, philosophy, of medicine, as well as of anatomy and physiology. But those accustomed to lean upon others, do not at once acquire, or even desire, the use of their own faculties. Established bodies naturally cling to established authorities, and it perhaps becomes them to be cautious of embracing, without due deliberation, any unauthorized novelty. To this duty, whatever others they may neglect, they must be allowed to be piously attentive. Nothing therefore could be more judicious than the subject of our new professor's first thesis, when he took the chair on the 14th of December, 1703; that "the Studies of the Moderns do not overturn, but confirm, the Medical knowledge of the Ancients." He pointed out in Hippocrates traces of the greatest discoveries, which the moderns by their superior opportunities had fully explained, such as the circulation of the blood; and thus without invalidating the merits of the latter, he dexterously confirmed the authority of the former, and flattered, instead of alarming, their disciples. He thus stimulated them to enlarge the sphere of their own knowledge, so that by improving the practical sciences of chemistry, anatomy, &c., they might further elucidate what the ancients had not fully understood or explained. In the progress of his lectures, however, Vallisneri was too judicious, and too honest, to sacrifice truth, to any ancient or modern authority. He attacked, without scruple, Avicenna's theory of fevers, and the erroneous practice founded thereon; as well as the doctrines of the putsreence of the humours, the stagnation of the liver, with many mechanical hypotheses of the old school. All this did not indeed pass without animadversion, especially the new doctrine of glandular secretion; but Vallisneri, supported by truth and experience, finally prevailed, and wrought a great change in the theoretic medicine of his day. Improvements in practice followed of course; and whenever the enlightened teacher met with any troublesome opposition, or, as usual, was attacked with misrepresentation and calumny, he found an able protector in Frederick Marcello, procurator of St. Mark, who being charmed with his earliest writings, had first recommended him to his appointments at Padua.

The intervals of his academical duties were often devoted by Vallisneri to rural excursions, for the improvement of his knowledge in natural history, as well as for the restoration of his bodily and mental powers, amid the wild and majestic, or the variously beautiful, scenes of nature, which lay profusely within his reach. In the summer of 1704 he visited the recesses of the Appennines, and climbed their stupendous precipices. The scenery which inspired the genius of Salvator Rosa, enlarged the mind, and enriched the acquisitions, of our philosopher, and he defended, like a fertilizing river, to benefit the world below. The following year, he undertook a less laborious journey, to visit his literary friends at Lucca, Pisa, Leghorn and Florence, and was invited by prince Ferdinand of Tuscany to Fratallino, where he met with a mort flattering reception, the prince's hospitality.
hospitability being extended to the personal, as well as literary, accommodation of Vallisneri at Florence itself, where every
door and cabinet were opened to him. From Leghorn he proceeded to Genoa, not without the usual adventure of a
shipwreck of his wretched felucca, by which accident he had the advantage of seeing for the first time a noble Date
Palm, in the open ground. He returned from Genoa to Padua by land. These and many similar excursions, in
several following seasons, were productive of much information to a man, who could not pursue the most beaten track
without picking up something. Indeed his line of study was new at that period. He contributed to open a new
world to microscopic observers, and to direct their enquiries to advantage. He had by this time collected an ample
museum, and choice library, both of them the more valuable and useful, for being collected by himself with
some particular object.

His studies were not impeded nor embittered by domestic
cares or quarrel; for though he married in 1692, and his
wife brought him eighteen children, she was a woman of
prudence and good sense; she directed his family in such a
manner as to render his home comfortable and happy.
The children, four only survived their infancy; a son
who bore his father's name, and inherited his activity of
disposition, and three daughters, two of whom became nurses at
Padua. The third, named Claudia, a woman of rare
talents, and the highest moral worth, remained unmarried at
home.

In the beginning of 1728, Rinaldo I., duke of Modena,
sent Vallisneri an unfoiled patent of knighthood, for him-
self, his son and their descendants. This honour was the
more just, as he had, eight years before, declined an invitation
from pope Clement XI. to become physician to his
holiness in the place of the famous Lancisi. He had also
refused to accept, from king Victor Amadeus, the appoint-
ment of first professor of physic, at Turin, with a very
large stipend. Nor were academical honours wanting to his
fame. He was associated with the Academy Nature Curio-
sum, the Royal Society of London, and almost every
learned body in Italy. Thus in the indefatigable pursuit of
knowledge, and well-merited fame, he completed his sixty-
eighth year. On the 12th of January, 1730, he was at-
tacked with a fort of epidemic catarrh, accompanied with
great debility, which, falling on his lungs, carried him off
on the 18th. He was interred in the church of the Erci-
tani at Padua, where his son erected a monument to his
memory with the following just and elegant inscription.

D. O. M.
Antonio Vallisnerio
Artis Mediceae afferenti eximio
Naturalis Historiae ac Philosophiae
Rediturus celebrerimo
Summis honoribus undeque audeo
Antonis filius mar. p.
MDCCXXXI. Act. LXVIII. Mens. VIII.

The filial piety of the younger Vallisneri accomplished a
more lasting memorial for his distinguished parent, in a complete and splendid edition of all his works, making three
folio volumes, printed at Venice in 1753, and illustrated with
plates, in one of which the fructification of the Lema
is exhibited. These writings, being frequently in the form
of letters, are diffuse, but the Italian style of the author is
esteemed by his countrymen. The whole work might be
epitomized with advantage, and would be found rich in
originality and acuteness. An ample life of Vallisneri is
prefixed to this publication, from whence we have extracted
the above account. He is certainly entitled to rank with
Redi, Malpighi, Reaumur, and Swammerdam, as an or-
iginal observer of the intricate and obscure physiology of
insects, and the lower tribes of the animal kingdom. He
co-operated with those philosophers in clearing away the
theory of equivocal generation, and other rubbish of the
schools. In medicine his merit is of a very high order, and
his name marks an epocha in the history of that science
in Italy. Those who had so long flumbered over the mazy
folia of ancient lore, were by him turned unawares out of
their dormitories and easy chairs, before they had time to
awake, much less to defend their pols. He exalted the
science from the study of books, to that of nature, and
fuccesse was the natural result. In practice he had the good
sense to promote the use of the Peruvian Bark, which, at that
period, had much prejudice to contend with. His prescrip-
tions were generally simple, and all his inquiries were free
from credulity and prejudice. We cannot here enumerate
the titles of all his various pieces. What relates to the
theory of generation is most esteemed; and he had the
courage to oppose the then famous vermicular hypothesis
of Lceuwenhoek. The memory of Vallisneri has been pre-
erved by his countryman Micheli, in the name of a very
curious and interesting genus of plants. See the next
article.

VALLISNERIA, in Botany, was dedicated by Micheli,
to the honour of his distinguished countryman, of whom we
have given an account in the preceding article. No genus
could have been more fortunately selected, as its history is
now, in the writings of Linnaeus, identified with that of the
generation of plants; of the theory of which, as taught by
that illustrious botanist, it affords one of the most conclu-
usive and celebrated proofs. Yet Micheli was ignorant of this
striking fact; and has absolutely, as we shall find, described
the two sexes as distinct genera. The male plant is his
Vallisneroides. We can offer no apology for this oversight
of so faithful an observer, but his attachment to Tourne-
fort, who shut his eyes against the sexual doctrine, and
Micheli durst not take the liberty of opening his own—Michi.
t. 10.)—Clavis and order, Dioecia Didriandia. Nat. Ord.

Gen. Ch. Male, Cal. Common Sheath of one leaf, in two
deb, oblong, often cloven, reflexed segments, including a
comical, compressed Common Spadix, covered all over with
fleshy flowers forming a spike. Cor. of one petal, in three
deb, obvate, widely spreading, or reflexed, segments,
without a tube. Stam. Filaments two, erect, the length of
the corolla; anthers roundish, simple.

Female, on a different plant, Cal. Sheath of one leaf,
single-flowered, cylindrical, elongated, with two erect seg-
ments at the extremity. Perianth superior, in three deep,
ovate, equal, spreading segments. Cor. of one petal, in
three deb, linear, abrupt segments, shorter than the calyx.
Pet. Germen inferior, cylindrical, longer than the sheath;
style very short; stigma in three deep, oval, convex seg-
ments, downy on the upper side, cloven half way down,
rather longer than the calyx, and bearing at the back a
small oblong appendage. Peric. Capsule cylindrical, of
one cell, not burrting. Seeds numerous, ovate, inferted in
many rows into the sides of the capsule.

Eff. Ch. Male, Sheath in two deep segments. Spadix
covered with flowers. Corolla in three deep segments.

Female,
Female, Sheath divided, single-flowered. Perianth in three deep segments, superior. Corolla in three deep linear segments. Stamens three, cloven. Capsule cylindrical, of one cell, with many seeds.

Obs. Such is the original genus, of which Micheli’s figure is more clear than his description. There can be no doubt that the part marked A, B, in the middle of his plate, below, represents the under side of the three stigmas. Linnaeus, who never saw a living flower, must have taken this point; but has corrected himself in manuscript. We have profited of this, and partly of Mr. Brown’s definition. V. orientalis of Roxburgh, if he thought the same genus, must lead to some further correction of the generic characters.

1. V. filipendula. Spiral Vallicentia. Linn. Sp. Pl. 1441. Wild. n. 1. Brown n. 1. (V. palustris, alge folio, italic, foliis in summum denticulatis, flore purpureo; Mich. Gen. 12. t. 10. f. 1. female. Vallicentoides palustris, alge folio, italic, foliis in summum tennesse denticulatis, floribus albis, vix conficibus; Mich. Gen. 13. t. 10. f. 2. male.) — Stalk of the female flower spiral. Leaves floating, linear, obtuse, finely serrated at the summit; tapering at the base.—In ditches in Italy, especially near Pisa. Communicated from near Arles, in Provence, by the late Dr. Brouillonet, in 1783. Mr. Brown found, what he is almost certain of being the same species, in New South Wales, about Port Jackson. This plant is perennial, flowering in summer and autumn. The root consists of long fibres, and propagates itself very widely by means of runners, so that the canals, in which the Vallicentia grows, are choked up with its foliage, and rendered not navigable for boats. Stem none. Leaves all radical, very long, linear, flaccid, pellucid, ribbed, smooth, entire, except at the end. Stalks of the female flowers very long, thread-shaped, unbranched, nerved, single-flowered, curiously spiral, but becoming more or less straight when the flower is ready to open, by which means the latter floats on the surface, and after impregnation, the stalk coils up again, and lodges the fruit at the bottom of the water. This fruit is three or four inches long; and judged by Mr. Brown to be rather of the nature of a berry than a capsule. The male flowers grow on a separate plant, on short, simple, straight, radical stalks. Each minute white flower separates from the common spadix, and rises cloaked, like a little bubble, to the surface of the water. Burbling there, these flowers float about in immense numbers, covering the water, and impregnating the females above described. Micheli has faithfully described the economy of this interesting plant, though blind to its physiology.

2. V. americana. American Vallicentia. Michaux Boreal—American. v. 2. 220. Wild. n. 2. Pursh n. 1. — "Stalk of the female flower nearly straight. Leaves erect, linear." — At the bottom of muddy and slow rivers in North America, flowering from August to October. Michaux observed it in the Mississipi and St. John’s rivers, Florida; Pursh in the Delaware, near Philadelphia, and elsewhere. The latter doubts whether it is a distinct species from V. spiralis; for he found the stalk of the female flowers to be, in deep water, really spiral. Michaux remarks, that the leaves are erect, less elongated than in the foregoing, and not tapering at the base. These circumstances may call all owing to the shalows and stillness of the water.


4. V. orientalis. Orientalis Vallicentia. Roxb. Coromand. v. 2. 34. t. 105. Wild. n. 3.—Stalk of the female flower straight. Leaves linear, taper-pointed. Stamens eight.—Native of shallow, stagnant, sweet water, on the coast of Coromandel. Roxburgh. Roots annual, fibrous. Leaves radical, erect, flat, smooth, entire, gradually tapering to a point, from nine to twelve inches high. Stalks all radical, straight, cylindrical, erect, simple, much shorter than the leaves. Stalk of the male flowers near three inches long, turbiniform, tapering upwards, containing many flaked flowers, which, by the elongation of their partial flasks, rife one by one out of the sheath. Each has a three-leaved calyx; three longer linear white petals, or segments of the corolla; eight unequal stamens, with oblong anthers; and an abortive germen, with three linear stigmas.

The flasks of the female flowers, on a separate plant, are shorter than those of the males, single-flowered. Stalk as in the male, but the flower is elevated above it and the germen by a partial stalk, or receptacle. Calyx shorter than in the male; petals longer and narrower, white. Stigma long, thread-shaped, white. Seeds roundish, flaked, ranged numerously along one side of the tapering capsule.

We have already hinted the affinity of this plant to Loureiro’s Physiolum; see that article.

VALLISNERIOIDES, Micheli’s name for the male plant of his Vallisneria; see that article.

VALLOR, in Geography, a town in France, in the department of Mont Blanc; 9 miles S.S.E. of St. Jean de Maurienne.

VALLON, a town in France, in the department of the Sart; 10 miles W. of Le Mans.—Also, a town in France, in the department of the Ardèche; 9 miles N.E. of Pont St. Esprit.

VALLONISE, a town in France, in the department of the Higher Alps; 9 miles S.W. of Briançon.

VALLOR, or Vail, among country people, a hollow mould, in which a new-made cheese is pressed.

VALLOTTI, Padre Francesco Antonio, in Biography, an ecclesiastic, and maestro di capella of the church of St. Antonio at Padua in 1770, was born in Piedmont in 1705. He was esteemed one of the best composers for the church in Italy. Tartini speaks of him in his Trattato di Musica, p. 100, in the following manner: "Padre Vallotti was formerly a most excellent performer on the organ, and is now an admirable composer, and master of his art." This good father was of so amiable a character, that it was impossible to know and not esteem him. He composed an anthem for the public funeral of Tartini, March 31, 1770; and in 1779 published at Padua the first book of a treatise entitled "Della Scienza Teorica e Pratica della moderna Musica." This first book is purely theoretical. The author promised three other books, the publication of which has not arrived at our knowledge. Book the second was to contain the practical elements of music; the third, the precepts of counterpoint; and the fourth, rules of accompaniment. It is to be feared, that this venerable author did not live to complete his design, as we have been informed that he died in 1785, at the age of 75.

VALLIS, in Geography, a town in Spain, in the province of Catalonia; 9 miles N. of Tarragona.

VALLUCE, a small island in the English Channel, near the coast of France. N. lat. 47° 26’. W. long. 2° 55’.

VALLUM, in Roman Antiquity, denote a kind of parapet with which they fortified their camps. In the vallum, some dilligent two parts; theagger, which was no more than the earth call up to form the vallum; and the jubes, which were a fort of wooden stakes to secure and strengthen it.

VALLY CREEK, in Geography, a river of Pennsylvania, which
which runs into the Schuylkill, N. lat. 40° 7'. W. long. 75° 30'.

Vally Forge, a place in Pennsylvania, near the union of Vally Creek with the Schuylkill. Here general Washington lay encamped in the winter of 1777, 1778; 20 miles N.W. of Philadelphia.

VALMAROSA, a town of Ilioria; 8 miles E.S.E. of Capo d'Ilioria.

VALMASEDA, a town of Spain, in the province of Bifey; 13 miles S.W. of Bilbao.

VALMIKI, in Biography, the name of a very celebrated Hindoo poet, author of that extraordinary poem in the Sanskrit language, entitled Ramayana, under which word we have given some account of its contents. Sir William Jones, in his ninth anniversary discourse to the Asiatic Society of Calcutta, delivered February 1792, gives his opinion that the Cuh of Moses and Valmiki were the same personage. (See Ramayana and Triveni.) But we are not in possession of any biographical particulars respecting him. His great work, the Ramayana, is esteemed the earliest epic poem, and is cited as nearly equal in authority with the more fanciful of the Hindoo books, such as the Purana and Veda, ascribed to Vyasa. See these articles.

VALMONT DE BOMARE, JAMES CHRISTOPHER, was born at Rouen, in September, 1731. He was intended for the bar, but his inclination to natural history induced him to devote himself entirely to that pursuit, and having obtained an order from the duke d'Argenfon, the minister at war, to travel for the improvement of science, with sufficient funds for the purpose, he spent several years in visiting the principal cities of Europe, and examining the most famous collections in natural history. Mines and metallurgical establishments engaged his particular attention; having visited Lapland and Iceland, he described its volcanoes; and returned, with many curious objects, to Paris in July 1756. He then began a course of lectures on natural history, which were continued till the year 1788. These lectures contributed to establish his reputation, and he had many advantageous offers from the courts of Russia and Portugal, the acceptance of which he declined. His works are as follow: v.z; "Catalogue d'un Cabinet d'Histoire Naturelle," 1758, 12mo.; "Extrait Nomenclature du Systèm complet de Minéralogie," 1759, 12mo.; and "Nouvelle Exposition du Regne Mineral," 1761, 1762, 2 vols. 8vo. But his capital work was his "Dictionnaire raisonné Universel d'Histoire Naturelle," in 6 vols. 8vo. This has passed through several editions in 8vo. and 4to., and being the first of its kind, served as the basis of all the dictionaries of natural history that have appeared since that time. One of the latest editions appeared at Lyons in 1800, 15 vols. 8vo. This celebrated naturalist died at Paris, in August, 1807. Gen. Biog.

VALMONT, or Vallemont, in Geography, a town of France, in the department of the Lower Seine; 6 miles E. of Fécamp.

VALMONTONE, a town of the Popedom, in the Campagna di Roma; 6 miles S. of Palestrina.

VALNORD, a town of Hungary; 5 miles S.W. of Szepen.

VALOE, an island of Sweden, in the bay of Christiania; 7 miles S.S.E. of Toniberg.

VALONGES, a town of France, and principal place of a district, in the department of the Channel. In 1546, it was pillaged by the English; 7½ miles N. of Coutances. N. lat. 49° 31'. E. long. 1° 23'.

VALOIS, HENRY DE, or VALESIUS, in Biography, born at Paris in 1603, and educated in the Jesuits' school, was admitted an advocate of the parliament of Paris, after having previously studied the civil law at Bourges. Declining the prosecution of the law, he devoted himself to literature, and particularly to the study of Greek and Latin authors. The affability of his application inspired his fight, the imperfection of which was in some degree counterbalanced by the retentiveness of his memory. Besides some private poems which were granted him, he was appointed, in 1660, hitorigorapher of France, with a considerable salary. At the age of sixty-one he married a lady, by whom he had seven children; and died in 1767, at the age of seventy-three years. His temper was harsh and irritable; fond of praise, and sparing in bestowing it on others; impatient and querulous under bodily indisposition, but unfeeling to the sufferings of others. With many infirmities and failings, he was a learned, discriminating, and accurate critic. His principal publications were, an edition of the "Ecclesiastical History of Eusebius," with a Latin version and notes; the "Ecclesiastical Histories of Socrates and Sozomen," as well as of "Theodore and Evagrius;" a valuable edition of "Ammius Marcellinus;" "Remarks upon Harperoition;" "Emendationum Lib. V.," with other pieces, printed after his death at Amsterdam, in 1740, under the care of Peter Burman. Moreri.

VALOIS, ADRIAN DE, brother of the preceding, was born at Paris in 1607, and studied in the Jesuits' college. Although he acquired a competent knowledge of the Greek and Latin languages, he attached himself principally to the study of French history; and in 1646 appeared the first volume in folio of his "Gelfa Francorum," which was followed by two more in 1658. He began with the reign of the emperor Valerian, and traced the history of the Franks to the deposition of Childeric, and his work was generally admired. As a recompose, he was associated with his brother in the office of hitorigorapher, and in the pension annexed to it. In 1675 he published "Notitiae Gallorum," fol. comprising, in alphabetical order, an account of the geography, towns, monasteries, &c. of France, deduced from its early records and histories. He followed the example of his brother, with whom he lived on terms of intimate union, by marrying a young wife, who brought him two children. He published, besides the works already mentioned, an edition of two poems written in the middle ages, a second edition of his brother's "Ammius Marcellinus," and some other pieces relating to antiquities. He died in 1692, at the age of eighty-five years. His son, CHARLES DE VALOIS DE LA MARE, was also a man of letters, and became a member of the Academy of Inscriptions and Belles Lettres, and antiquary to the king. He published a collection of critical, historical, and moral reflections, and Latin poems under the title of "Valefanæ," and edited two poet-humorous works of Vaillant the medallist, and wrote several papers for the Academy, of which he was a member. He died in 1749, aged seventy-six. Moreri.

VALOMBROSO gives its name to a congregation of Benedictine monks, founded in the Apenines by Cualbert of Florence, in the 11th century; who, in a short space of time, propagated their discipline in several parts of Italy.

VALON, in Ancient Geography, a river of Africa, in Mauritania Tingitana. Ptolemy.

VALONA, in Geography, a sea-port town of European Turkey, in Albania, on a gulf of the Adriatic, gained by the Turks from the Christians in the year 1464. In the year 1690, it was taken by the Venetians, but retaken by the Turks the year following; 68 miles S. of Durazzo. N. lat. 40° 36'. E. long. 19° 28'.

VALONGO, a town of Portugal, in the province of Beira; 21 miles S.E. of Lamego.
VALONIA, in Botany. See Velania.

VAROR BENEFICORUM, in Law. See First-fruits.

VALORE MARITAG, Value of Marriage, a writ which
anciently lay for the lord, after having proffered suitable
marriage to an infant who refused the same: to recover the
value of the marriage. See Guardian.

VALORSINE, in Geography, a town of France, in
the department of the Leman; 15 miles S.E. of Nître
Dame d'Abondance.

VALOYEA, a town of European Turkey, in Mol-
davia; 52 miles N. of Jaffy.

VALPARAYSO, a town of Spain, in New Caftle;
15 miles S. of Hucte.

VALPARAYSO, a fea-port town of Chili, fittuated on a
bay of the South Pacific ocean. This town was at first very
mean, confifting only of a few warehouses, built by the
habitants of St. Jago, for laying up their goods till shipped
off for Callao, the harbour of Valparayfo being the nearest
port of that city, from which it is only 60 miles distant.
The only inhabitants at that time were the few fervants left
by their repective masters for taking care of the ware-
houses, and managing their mercantile affairs. But in pro-
ceds of time, the merchants themselves, together with fev-
eral other families, removed from St. Jago, in order to be
more conveniently flituated for trade; since which it has
gradually increafed, fo that at present it is both large and
 populous; and would be still larger, were it not for its in-
convenient fituation, flanding near to the foot of a moun-
tain, that a great part of the houses are built upon its acclivity,
or in its breaches. Valparayfo, besides its parish-church,
has a convent of Francifcans, and another of Augufines;
but very few religious, and the churches belonging to them
small and mean. It is inhabited by families of Spaniards,
calls both of Mulattoes and Mefitzos. Here is a mi-
litary governor nominated by the king, who having the com-
mand of the garrifons in the several ports, and of the militia
of the place and its dependancies, is to take care that they
are properly disciplined. The proximity of this port to St.
Jago, has drawn hither all the commerce formerly carried
on at that city. To this it owes its foundation, increafe,
and prefent prosperity. All the Callao fhips which carry
on the commerce between the two kingdoms come hither.
In this port they take in wheat, tallow, cordovan-leather,
cordage, and dried fruits, and with these return to Callao;
and a ship has been known to make three voyages in one
summer between November and June. Valparayfo is abun-
dantly supplied with provisions from St. Jago and other places
in its neigbourhood. Among the several kinds of game
there is here such a plenty of partridges in their feafon, which
begins at March and lasts several fucceding months, that
the muleteers knock them down with flicks, without going
out of the road, and bring great numbers of them to Val-
parayfo. But few of these or any other birds are feen near
the town. It is the fame with regard to fish, very little
being to be caught either in the harbour or along the cofit,
in comparison of what may be taken in the other parts. The
harbour is every where free from rocks and shoals, except
to the north-eaft of the breach De los Angeles, where, about
a cable's length or two from the land, is a rock, which must
be more carefully avoided, as it never appears above water,
but sometimes has not a depth fufficient for a fhip of any
burden to pass over it; 225 miles N. of Conception. S. lat.
33° 1'. W. long. 72° 16'.

VALPERGA, a town of France, in the department of
the Dora; 11 miles S.S.W. of Ivrea.

VALPERSCHWEIL, a town of Switzerland, in the
cantton of Berne; 10 miles N.W. of Berne.

VALPO. See Valpo.

VALPUESA, a town of Spain, in Old Caftle; 10
miles N.N.E. of Frias.

VALREAS, a town of France, in the department of
the Drôme; 18 miles N.N.E. of Orange.

VALS, a town of France, in the department of
the Ardèche, celebrated for several medicinal springs in
the neighbourhood; 12 miles S.W. of Privas.

VALSA, in Botany, Adanson Fam. v. 2. 9. Scop.

CAR. v. 3. 397, an unexplained name, used by those au-
thors for what is now the Sphæria of benztals; see that
article.

VALSALVA, ANTON-MARIA, in Biography, an emi-
ten anatomift, physician, and surgeon, was born in 1666,
at Imola, in Romagna. Having received the firit elements
of literature in the Jefuits' feminary, he was fend to the
university of Bologna, and placed under the immediate tuti-
on of the celebrated Malpighi, and here he purfued his
various studies with an affiduity which impaired his health.
He graduated at Bologna in 1687, and connecting surgery
with phyfic, acquired high reputation. He fimplified and
improved furgical instruments, bafhted from Bologna the
furfet practice of cauterizing the arteries after amputation,
and in the cure of deafnefs employed manual operations. In
1697 he was chosen professor of anatomy in the university,
and appropriate buildings were erected for his ufe at the
anatomical theatre. The school of Bologna acquired cele-
brity under his direction, and some of his pupils became
eminent in their profession. Of this number was Mor-
gagni. In advanced years Valfalfa grew corpulent and
lethargic, and was carried off by an apoplectic stroke in
February 1723, at the age of fifty-seven years; leaving a
widow and three daughters. His anatomical museum was
bequeathed to the Institute of Bologna, and his various ap-
paratus of chirurgical instruments to the hospital for incur-
able. The principal of his works is a treatife "De Aure
Humana," reprinted at Bologna in 1704, 4to. and again
with Morgagni's Epiftles, at Venice, 1740. After his death,
Morgagni published three of his "Differtations" on anato-
mical fubjects, which had been read before the Inftitute.
This great anatomift's work "De Sedibus et Caufis Mor-
borum," contains a number of defcriptions by Valfalfa.

VALSECA, in Geography, a town of Spain, in Old
Caftle; 11 miles N. of Segovia.

VALSTAGNO, a town of Italy, in the Vicentin; 18
miles N. of Vicentin.

VALSTAGNO, a town of Italy, in the Vicentin; 18
miles N. of Vicentin.

VALTANAS, a town of Spain, in the province of
Leon; 15 miles E. of Valencia.

VALTELINE, a lordhip of Italy, at the foot of the
Alps; bounded on the N. by the Grifons, on the E.
by the county of Bormio and the Breffian, on the S.
by the Bergamafco and the Milanefe, and on the W.
by the county of Chiavenna and the Milanefe. This
country, which is called by the Grifons Pellin, or Véllin,
and by the inhabitants Valhe Téllin, is a valley inclosed
between two chains of lofty mountains, about fifty miles in
length, and from eight to twenty in breadth. It is exceed-
ingly fruitful, and throughout its whole extent watered by
the Adda, which, after receiving all the streams infuifng from
the foret, difcharges itself into the Como lake. In some
parts the heat is intenfe, but in others more moderate,
and on the hills and the greatefl part of the adjacent valleys
the air is mostly cool. Of this variation in its temperature,
the neceffary confequence is a variation in the products of
the earth. The levels in this valley, through which the Adda
purses its courfe, and the breadth of which in some parts

D 2

is
is not less than a mile, exhibit a delightful variety of corn-fields, meadows, vineyards, and orchards of chestnuts and other fruits. The vineyards on the mountains towards the north produce the best wine in the whole country, and above them are corn-fields, meadows, and pasture-lands. The hills on the south side are covered with fine woods of chestnuts, fields, meadows, and rich pastures, in which graze numerous herds of cattle. This country abounds also in excellent red wine, of a most delicious flavour, and of so good a body that it will keep for a whole century, improving both in taste and wholesomeness, and gradually turning paler, till at length its redness totally disappears. Great quantities of this wine are exported. The apples and pears in most places are not much esteemed; but the peaches, apricots, figs, and melons, are exquisite. Here is likewise plenty of lemons, citrons, almonds, pomegranates, chestnuts, and other delicious fruits. Its soil also would produce all kinds of grain and pulse; but the levels being intersected with swampy places, which have hitherto remained without culture, and the wine-trade chiefly engrossing the attention of the inhabitants, it does not yield a sufficiency for their consumption without importation. Some parts grow hemp, and in the levels, particularly on the higher grounds and the mountains, are fine pastures. Bees and silk-worms are bred here in vast numbers. The Adda yields plenty of fish, and is noted for its trout, which often weigh from fifty to sixty pounds. The whole of their mine-works here confit in a few iron-founderies.

The chief commerce of the Valteline is carried on with Milan and the Grisons. The principal exports are wine and silk, which turn the balance of trade in its favour; they enable the inhabitants to exist without any manufactures, and help to supply the money which is exacted by the governors.

The wine is sent into the Grisons, Germany, the Venetian states, Bormio, and occasionally to Milan. Upon a rough calculation, 73,000 fona, or horse-loads, are annually exported. The silk is sent to England, Zurich, and Bale. The district of Delebio and Talomara produces the finest silk, the neighbourhood of Sondrio the next in quality, and the district of Tirano supplies an inferior fort. Three thousand pounds of the finest silk, which is esteemed as good as the silk procured from Piedmont, is sent annually to England by way of Olland. The greater part is wound in the Valteline, for which purpose there are silk-mills in the principal districts.

Besides these commodities, the Valteline exports planks, cheese, butter, and cattle. The inhabitants receive from Milan, corn, rice, salt, silk, flax, linens; from Germany and Switzerland, cloth and linen; from Genoa, spices, coffee, and sugar.

There are no manufactures in the Valteline, and almost all the menial trades are exercised by foreigners. The population of the Valteline may be estimated from the following rough sketch:

<table>
<thead>
<tr>
<th>District</th>
<th>Souls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper District</td>
<td>20,000</td>
</tr>
<tr>
<td>Government of Teglio</td>
<td>8,000</td>
</tr>
<tr>
<td>Middle District</td>
<td>18,000</td>
</tr>
<tr>
<td>Lower District</td>
<td>16,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>62,000</strong></td>
</tr>
</tbody>
</table>

The cottages of the peafants, which are built of stone, are large, but gloomy, generally without glass windows; and exhibit an uniform appearance of filth and poverty.

Perhaps no part of Europe is more fruitful than the Valteline, and yet there is no country in which the people are more wretched. Many reasons may be assigned for the misery to which they are reduced. The first and principal cause is the form of government. The governors generally abuse the exorbitant authority entrusted to them by the laws; the peafants are imprisoned upon the slightest information; and as all transgressions are punished by fines, an accused person is seldom acquitted; so that a considerable number are annually ruined in the courts of justice.

Beside the individuals who are oppressed to suffer for their own guilt, the parishes are subject to continual affluences, towards defraying the expenses for the trial and imprisonment of the poor parishioners; if they are unable to pay the sum required, it is demanded from the parish to which the criminal belongs. In this case it frequently happens, that the affluences, instead of being laid upon the landholders, are imposed upon each hearth, by which means the chief burden falls upon the poor.

Another cause of wretchedness proceeds from the present state of property. Few of the peafants are landholders; as from the continual oppression under which the people have groaned for above two centuries, the freeholds have gradually fallen into the hands of the nobles and Grisons, the latter of whom are supposed to possess half the estates in the Valteline. The tenants who take farms do not pay their rent in money, but in kind; a strong proof of general poverty. The peasant defrays the costs of cultivation, and delivers nearly half the produce to the landholder; the remaining portion would fill compensate his labour and expense, if he was not in some measure befriended by the fertility of the soil. The ground seldom lies fallow, and the richest parts of the valley produce two crops; the first is wheat, rye, or spelt, half of which is delivered to the proprietor; the second is generally millet, buckwheat, maize, or Turkey corn, which is the principal nourishment of the common people; the chief part of this crop belongs to the peasant, and enables him in a plentiful year to support his family with some degree of comfort. Thos who inhabit the districts which yield wine are the most wretched; for the trouble and charge of rearing vines, of gathering and pressing the grapes, is very considerable; and they are for apt to confine the share of liquor allotted to them, in intoxication, that, were it not for the grain intermixed with the vines, they and their families would be left almost destitute of subsistence.

Besides the business of agriculture, some of the peafants attend to the cultivation of silk; they receive the eggs from the landholder, rear the silk-worms, and are entitled to half the silk. This employment is not unprofitable; for although the rearing of the silk-worms is attended with much trouble, and requires great caution; yet as the occupation is generally entrusted to the women, it does not take the men from their labour. With all the advantages, however, derived from the fertility of the soil, and the variety of its productions, the peafants cannot, without the utmost difficulty, and continual exertion, maintain their families; and are always reduced to the greatest diffircs, whenever the season is unfavourable to agriculture.

To these causes of penury among the lower classes, may be added the natural indolence of the people, and their tendency to superfluity, which takes them from their labour.

This country is without so much as one city, but has some considerable towns, with many thriving villages. Its language is a corrupt kind of Italian. The Roman Catholic is the only religion. Their clerics are under the jurifdiction
dition of the bishop of Como. They are not responsible to the ordinary courts, their immunities being so exorbitant as to render them almost independent of the civil authority; they are only amenable to the court of the bishop of Como. If a priest is guilty of any misdemeanour, his person cannot be secured without the concurrence of the bishop and governor of the district in which the crime was committed. It is therefore extremely difficult to bring an ecclesiastical to justice; as impunity is easily purchased, either by securing the favour of the bishop's vicar or of the magistrate. Nor are these pernicious privileges confined merely to the clergy, but extend to all persons wearing an ecclesiastical dress, with the permission of the bishop of Como.

All civil causes of the clergy, below the value of two hundred livres, are decided by the vicar of the bishop of Como: above that sum, they are brought before the bishop. An appeal from his decision lies to the pope's nuncio at Lucerne, from him to the ecclesiastical tribunal at Aquilea, and from thence to Rome.

The whole country is divided into three districts, or duchies, called Sopra, Mezzo, and Sotto, or Upper, Middle, and Lower. Tirano is the capital of the first, Sondrio of the second, and Morbegno of the last. It is divided into five governments; viz. those of the upper district; of the middle district, called also the government of Sondrio; of Treviso, of Morbegno, and of Tirano.

Each of these five governments is subject to a magistracy appointed by the Grifons, who is changed every two years. The magistracy over the middle district is called governor of the Valteline, and polysells in some respects a superior degree of authority to the others, who are styled podestas; he is also captain-general of the Valteline.

All public concerns, which do not fall under the jurisdicition of the Grifons, are discussed and determined by a council composed of five representatives, one from each district, which meets as occasion requires at Sondrio.

The Valteline, together with the counties of Chiavenna and Bormio, (which had long been the constant source of hostility between the bishops of Como and Coire,) came, in the year 1336, under the dominions of Azzo Visconti, sovereign of Milan, who quietly transmitted them to his successors. Upon the death of John Visconti, one of Azzo's successors, his territories were divided between his nephews Galeazzo and Barnabas. Upon the demise of Galeazzo, his son, John Galeazzo, secured the person of his uncle Barnabas, and having confined him in the castle of Trevio, until his death, which happened in 1395, annexed his dominions to his own, and became by this union the greatest and most powerful prince in Italy. Matteo, son of Barnabas, took shelter, upon his father's imprisonment, with Hartman, bishop of Coire, and died in exile, without recovering any share of his inheritance. Previous to his death, he formally ceded all his right and title over the Valteline, Chiavenna, and Bormio, to the bishop of Coire, as a mark of gratitude for his protection. To this cession, at that time of no avail, the Grifons owe the possession of these provinces. The claim lay dormant for above half a century, until some discontent arising in the Valteline, in 1487, the Grifons made an irruption into that country, in support of the bishop's rights, but their arms not being at that time attended with success, they purchased a peace by renouncing all pretensions to the Valteline. They renewed, however, their claim in 1512, when Ludovico, called the Moor, duke of Milan, was taken prisoner by Louis XII.; and the whole Milanese, comprising the Valteline, occupied by that monarch. Upon this revolution, the Grifons, in conjunction with the bishop of Coire, entered the Valteline, and having expelled the French troops, took possession of the country: they were received with joy by the inhabitants, who did homage to their new sovereigns, and in return obtained from them the confirmation of all their privileges. A compromise was immediately entered into between the bishop of Coire and the three leagues to share between them the sovereignty of this country. In the following year, Maximilian Sforza, raised to the ducal throne of Milan upon the expulsion of the French, ceded in perpetuity the possession of the Valteline, Chiavenna, and Bormio, to the bishop of Coire, and the Grifons; and this cession was ratified by Francis I. in the treaty of peace which he concluded with the Swits and their allies, the Grifons, in 1516, when he obtained possession of the Milanese. In 1520, the republic of the Grifons acquired the whole dominion of the Valteline, to the exclusion of the bishop of Coire, under pretence that the latter had not furnished his quota of men and money in the war with James of Medicis, in defence of these ceded countries; accordingly they compelled the bishop to sell his share of the sovereignty over the Valteline, Chiavenna, and Bormio, for a yearly income of 575 florins, to be paid to the bishop and his successors out of the customs of Chiavenna. From that period, these provinces were possessed by the Grifons with molestation, until the rival interests of France and Spain, the intrigues of the pope, religious enthusiasm, the zeal of party, and the actions of the Grifon governors, kindled an insurrection, which commenced with a massacre of the Protestants, and raged for a series of years with the most savage and unrelenting fury.

During the constant wars, which from the accession of Philip II. the restless ambition of the Spanish court entailed upon Europe, the German and Spanish branches of the House of Austria were incomparably united; and the council of Vienna were directed by the cabinet of Madrid. Under these circumstances, the Valteline, which, by connecting the Tyrol and the Milanese, afforded the only secure passage for the junction of the Austrian and Spanish troops, became of signal importance.

The same reasons which rendered the Spaniards desirous to secure the Valteline, induced the French to obstruct their designs. The Spaniards, however, pursued their projects upon the Valteline without opposition, when they were freed from their most formidable rival, the count of Fuentes, governor of Milan, by assassination, and availed themselves of the domestic dissensions between the Grifons and the inhabitants. When all the Protestants were either destroyed or driven out of the country, the remaining inhabitants renounced their allegiance to the Grifons, and framing a new form of government, threw themselves under the protection of the king of Spain, who sent an army to their support. The people of Bormio followed the example of the Valteline, with this difference, that they did not massacre, but only expelled the Protestants. Having entered into an offensive and defensive alliance with the inhabitants of the Valteline, they also formed an independent commonwealth.

The Grifons, divided among themselves, were totally unequal to the chastisement of their revolted subjects. The Catholics were desirous of employing the mediation of Spain, for the purpose of recovering the Valteline; the Protestants, inclined to vigorous measures, proposed an application to the Swits cantons, Venice, and France. After violent dissensions, which were not terminated without bloodshed, the Protestant interest prevailed, and a deputation was sent to those powers.
When cardinal Richelieu acquired ascendency, and effected a revolution in the French politics, he perceived the importance of the Valteline, and adopted measures, which proved successful; so that in two campaigns the Spaniards were driven from the Valteline, Chiavena, and Bormio. Under the administration of Richelieu, it was agreed, that the Valteline should again be restored to the Grifons, upon the following conditions: no other religion but the Roman Catholic to be tolerated; the inhabitants to elect their own governors and magistrates either from themselves or from the Grifons, but always from persons of the Roman Catholic persuasion; and the governors to be confirmed by the Grifons. In return for these privileges, it was stipulated that the inhabitants should pay an annual tribute, the amount of which was to be settled by mediation. In consequence of this treaty, concluded on the 5th of March 1626, the French resigned the forts of the Valteline into the hands of the pope, and evacuated the country.

When Richelieu had completed the reduction of the Hugonots by the capture of Rochelle, he turned the whole force of France against the House of Austria; and among other enterprises, directed his attention to the Valteline; but the Grifons, encouraged and aided by the Spaniards, drove the French from the country; the treaty of Milan produced a close alliance between the Spaniards and the Grifons; and the Valteline was restored.

This treaty, contracted in the year 1635, secured to the Spaniards the passage of the valley, which was the great object of the war, and restored the Valteline, Chiavena, and Bormio, to the Grifons, under the following conditions: an act of oblivion; the immunities of the subject countries to be confirmed as they existed before the revolution of 1610; no religion but the Catholic to be tolerated; no person of any other persuasion to be permitted to reside, excepting the governors, during the two years they should continue in office, and the Protestant nobles of lands, who should not be allowed to remain in the country above three months in the year; the privileges of the ecclesiastics to be restored in their full latitude.

Since the pacification of 1637, no material change took place in the state of affairs. The sovereigns of Milan have always cultivated the friendship of the Grifons; and the inhabitants of the Valteline endured a regular course of tyranny under the government of a free state; confirming a fact notorious in the annals of ancient Greece, that no people are more oppressed than the subjects of a democracy.

During the progress of the French revolution, Bonaparte confirmed the union of the revolted provinces with the Cisalpine republic; so that after a period of nearly three centuries, the Valteline, Chiavena, and Bormio, were again incorporated with the Milanese under a republican government; but the expulsion of the late French emperor has restored the ancient arrangements in Italy, and the Valteline returns to its former possessions. Cox's Switzerland, vol. iii.

VALTERIE, La, a town of Canada, on the St. Lawrence. N. lat. 45° 54'. W. long. 73° 10'.

VALTESCHAND, or WALTESCHAND, a town of Holland, in Overijl; 12 miles N.E. of Covorden.

VALTIERRA, a town of Spain, in Navarre. Near it is a mine of salt gem; 10 miles from Tudela.

VALVA, in Ancient Geography, a mountain of Africa, being one of the most considerable in Mauritania Caffariensis.

VALVA, in Geography, a town of Naples, in Abruzzi Citra, the fee of a bishop; 18 miles S.S.W. of Civita di Chieti.

VALVANO, a town of Naples, in Principato Citra; 6 miles N. of Cangiano.

VALVASONE, a town of Italy, in Friuli, on the Tajo; 14 miles W.S.W. of Udina.

VALVASOR, or VALVASOUR. See VAVASOR.

VALUATION OF Land, in Agriculture and Rural Economy, the business of ascertaining its real worth. It is an undertaking which requires considerable knowledge of the nature and application of all sorts of landed property, as well as of the various improvements of which they are capable by cultivation and different other means.

It is necessary, before entering upon it, that the nature of the tenure, title, and other matters should be well understood. The writer of the work on "Landed Property," however, supposes, that the value of the free, or pure freehold tenure, being properly ascertained, that of any inferior sort of holding may readily be found from it, by means of the general rules of calculation: but that the free, or pure freehold tenure, is worth in another sense not merely, though principally, on account of the rental value, or the current price they will let for to tenants in different situations; but through other less permanent caucaes; such as the quantity of land at market; the number and importance of the demands for it in the given district; as well as the spirit which prevails in it at the time, in regard to the temporary polleflation of landed property at the particular period.

There are circumstances that are constantly worthy of the attention of those whole views in the obtaining of land are not confined to any particular spot or district.

It is fixed, that the usual method of coming at the free, or pure freehold tenure, is first to ascertain the fair rental value or price by the year, and to multiply this by the number of years' purchase which the existing demand for land will bear, in the given situation, at the time. But that the number of years' purchase, or the ratio between the rent and the value of lands, varies greatly, as from 20 to 40, 25 to 30 being the more ordinary numbers. Consequently, a parcel of land, the fair rental value of which is 100l., is, in common cases, worth from 2500l. to 3000l. But the real rental value, which is the only true and firm groundwork to proceed upon, whether in the purchase or the management of landed property, cannot be easily obtained. Speaking generally of the lands of this country, it is, it is thought, what very few men are able to set down. It is true, that, in almost every district, or almost every township, there are persons who tolerably well know the rate at which the lands of their respective neighbourhoods are usually let. But reciprocally interchange them into each other's districts, and their errors would, it is said, be egregious. Nor can a mere provincialist, especially in a district which is unenlightened by modern improvements, be aware of the value even of his own farm, under the best course of management of which it may be capable: nor can he see, through the double veil of ignorance and prejudice, the more permanent improvements that may be made upon it, so evidently as one who has a more general knowledge of rural subjects and concerns, and is in the habit of discovering and prosecuting such improvements. It is consequently necessary to have different persons to accomplish the business in a complete manner in many instances.

The particular circumstances that require to be considered as giving value to land, are chiefly these: 1. The quantity of
of the land, which is the ground-work of the calculation; though it has little weight in the scale of valuation. The fee-simple value of an acre of land may be less than twenty shillings, or it may be more than an hundred pounds. Nevertheless, it is on the quantity the rental value is calculated; and it is usual for the person who pays it to exhibit a "particular" of the estate or property on its dispoal: shewing, or which ought to be shewn, not only the aggregate quantity, but the number of acres that each piece or parcel contains, as well as other matters; and ought, most particularly, to specify the distinct quantities of the lands of different qualities; in order that their several rental values may be ascertained with greater ease and accuracy.

2. The intrinsic quality of the land, which is essential in forming the estimate. But even this, in a general view of the value of lands throughout the kingdom, is often, it is said, of secondary consideration: for, in many cases, their values are given by situation, rather than by soil and subfrata. In some cases, as has been seen, the value of the situation may be a great many times more than that of the intrinsic value of land. But this excessive influence of situation is, however, limited in its effects, and is chiefly confined to the environs of large towns, and other extra-ordinary markets for produce of the farm-kind. A great majority of the lands of this country owe their values less to situation than to intrinsic quality; and to come to this with sufficient accuracy, is the most requisite, and, at the same time, the most difficult part of valuation; as it depends almost wholly on extemporary judgment, exercised on the frequently few data which rise to the eye in passing over the field of estimation. It is therefore, almost needless to state, that to acquire the degree of judgment which is necessary to the execution of this difficult critical task, it is required to know and be perfectly acquainted with the nature and productiveness of lands of different appearances: a sort of knowledge which scarcely any thing but mature practice in the cultivation and use of lands of different qualities can sufficiently teach; though long habit may do much in ordinary cafes towards hitting off the value of lands, without an extensive knowledge of the practice of agriculture.

There are cafes, however, it is said, in which both of these qualifications are found insufficient to give any accuracy of judgment, even among provincial values of land. And a person who ventures to leap forward as an universal valuer, should have either an extraordinary talent for the purpose, or should, after a suitable initiation, have had great experience in rural concerns in different parts of the kingdom.

3. The situation; which, although it has been already stated, that the value of the lands of this country, aggregatedly considered, depends less on situation than on intrinsic quality, yet in every part it has great influence. Thus, an acre of land, the intrinsic quality of which renders it, in an ordinary situation, in what regards locality merely, worth twenty shillings the acre, would not, if it is observed, in some districts or places, be worth more than fifteen shillings, while in others it would bear to be estimated at twenty-five shillings, or even a higher price of rent, to a farmer on a large scale, and away from the immediate environs of a town, or any populous district of manufacture; for reasons that will be seen in examining the different particulars of situation. In the temperature of situation too, whether it be given by elevation, aspect, or exposure, a powerful influence is found, which is capable of altering exceedingly the value of lands. The fame sort of soil and subsoil, it is said, which is not unfrequently seen on exposed mountains, and hanging to the north, and which in that situation is not worth more than five shillings an acre, would, if situated in a sheltered vale tract, and lying well to the sun, be worth twenty shillings, or a greater rent. Even on climate, something considerable in this business, it is thought, depends. In the southern part of the country, the harvest is, in general, a month earlier than in those of the north; though it is not regulated exactly by the climate, or the latitude of the places: this is consequently a circumstance that requires to be attended to by those who estimate the values of estates or lands. For an early harvest is not only advantageous in itself, but gives time to till the ground, or to take an autumnal crop, which are advantages that a late harvest will not so well admit of being had. And another kind of temperature of situation has still, it is supposed, more influence on the value of lands, which is that of the moistness of the atmosphere. A moist situation not only gives an uncertain and often late harvest, but renders it difficult and hazardous; as is so frequently experienced on the western coastal-plies of this island. Even in the turn of surface, exercise is found, it is said, for the judgment. Lands lying with too deep or too flat surfaces, particularly when of the arable kind, and retentive, are of less value than those which are greatly shelving, so as to give a sufficient discharge to surface-water, without their being difficult of cultivation. Steep-lying lands are not only troublesome and expensive under the operations of tillage, but in taking out manures, and getting off the produce. Lands lying with an easy descent, or on a gently billowy surface, may be worth more by many pounds an acre in the money they will bring, than others of the same intrinsic quality, hanging on a steep. Another consideration of the same weight in valuing an estate, or other landed property, is a supply of water for domestic purposes, for the uses of live-stock, and for the purpose of irrigation. There are situations, it is said, in which a copious stream of calcareous water would enhance the fee-simple value of a large estate some thousand pounds. Likewise a sufficient supply of manure, whether dung, lime, marle, or other melioration, being at a moderate price, and within a moderate distance of land-carriages, materially adds to the intrinsic value of lands. And the established practice of management of the district or county in which an estate or land lies, is capable of enhancing or depressing the value of it exceedingly. Even the single practical point of ploughing light and loamy lands with two oxeen, or two active horses, instead of four heavy ones, is capable of making a difference, on good land which is kept alternately in herbage and corn-crops, of from five to ten shillings a year, on the acre; or ten pounds an acre in the money value which it is worth.

The price of labour is also flated as another regulator of the marketable value of land in a given district. It is always right, however, to compare this with the habits of exertion and industry which prevail among farm workmen, before the next amount of labour can be safely let down. The price of living too, or exigence of house-keeping, prevalent among farmers, has its share of influence on the value of lands. In the more recluse parts of the north of this country, the farmers, especially of the lower and the more inferior claes, and their servants, are fed, clothed, and accommodated, at nearly half the exigence of those of a similar degree in many parts of the more central and southern districts. In a county where frugality prevails too, lands of a given quality will ever, it is laid, bear a higher rent than they will where a more profuse manner of living has gained a footing. Hence, likewise, the spirit of improvement, or the prejudice against it, which prevails in a district, is a circumstance of some value, it is supposed, in this intention. For
if the former be in a progressive state, especially if it be still in the more early stages of its advancement, a rapid increase of rent may, with a degree of certainty, be expected: whereas, under the leading influence of the latter, half a century may, it is thought, pass away before the golden chariot of improvement can be profitably put in motion. And lastly, may be noticed, it is said, the attractive centre to which the labours of the husbandman will ever tend,—markets, in which, more than in any other circumstance, we are to look for the existing value of lands. Their influence is not confined to towns and populous places of manufacture, for in ports, and on quays, whether of inlets, estuaries, rivers, or canals, markets are met half way: even by good roads their distance from the farm-head may be said to be shortened.

In this detail of the particulars of situation in respect to the value of landed property, it is observed, the attention requisite to be employed by a valuer who is called upon to act in a county that is new to him is perceived. A provincial, or even a professional valuer, who acts in a district, the existing value of the lands of which he is sufficiently acquainted with, determines at sight, and according to the hold of his judgment, on their respective values: for he knows, or ought to know, their current prices; what such and such lands let for in the neighbourhood; what he and his neighbours give, or would give, for lands of the same quality and state, without advertizing to the particular circumstances of the situation, they being considered and given as the established amounts arising out of them; refting his judgment solely on the intrinsic quality and existing state of each field or parcel as it paffes under his eye. But let his skill be what it may in a county or district in which he has acquired a habit of valuing lands, he will, in a distant part or district, the current market prices of the lands of which may be ten, twenty, or fifty per cent. above or below those: which he has accustomed to put upon lands of the same intrinsic qualities and existing state, find himfelf at a loss; until he has learnt the current prices of the place or county, or has well weighed and considered the circumstances of situation: to which, in every case, he must necessarily attend, before he can determine their value under an improved practice, or venture to lay down general rules for their improvement.

4. Another class of circumstances which influence the marketable value of lands still remains, it is said, to be enumerated and considered. These relate to their existing state, or the manner in which they lie at the time. Their state in respect to inclosure is a matter of great consideration. Open lands, though wholly appropriated, and lying well together, are of much less value, except for a sheep-walk, or a rabbit-warren, than the same lands would be in a state of fituitable inclosure. If they be disjoined and intermixed in a state of common field, or common meadow, their value may be reduced one-third. If the common fields or meadows be what is often termed Lannister land, and become common as soon as the crops are off, the depression of value may be felt down at one-half of what they would be worth in well-fenced inclosures, and unincumbered with that ancient custom. The difference too in the value between lands which lie in a detached state, though within well-fenced inclosures, and those of the same quality that lie in a compact form, or, in the familiar phrase, within a ring-fence, is considerable. The disadvantages of a scattered estate are, it is said, similar to those of a scattered farm. Even the single point of a want of convenient access to detached fields and parcels is, on a farm, a serious evil. And it is on the value of farms that the value of an estate or land is to be calculated. The state of the roads, whether public or private, within an estate, and from it to the neighbouring markets, or places of delivery of produce, is further an object of consideration. And in this view, the state of the water-courses, or fewers and ditches, within and below an estate, likewise requires to be examined into; as the expense of improvement or reparation will be more or less, according to their existing state at the time; or, perhaps, by reason of natural causes, or through the obliquity of a neighbour, and the defective nature of the present laws of the country in this respect, the requisite improvements cannot be effected at any expense. The state of drainage of lands that lie out of the way of floods, or col-lected water, requires also to be taken into consideration. For although the art of draining be now pretty well understood, it cannot be practised on a large scale, without much cost. The state of the lands too, as to tillage and manure, is entitled to more regard than is generally bestowed on it, in valuing them. But even to a purchaser, and still more to a tenant for a term, their state in these respects demands a share of attention. Lands that are in a high state of tillage and condition, so as to be able to throw out a succession of full crops, may be worth five pounds of purchase-money an acre, more than those of the same properties, which are exhausted by repeated crops, and lie in a useless state of founfees; from which they cannot be raised, but at a great expense of manure and tillage. Their state, as to grazs or arable, is, it is thought, better understood, and generally more attended to. Lands in a state of profitable herbage, and which have lain long in that state, are not only valuable as bearing a high rent while they remain in that condition, but, after the herbage has begun to decline, will seldom fail to throw out a valuable succcession of corn-crops.

Hence the length of time which lands, under valuation, have lain in a state of herbage, especially if it has been kept under pasturage, is a matter of inquiry and estimation in the execution of business of this sort. And, lastly, the state of farm buildings and fences is, it is conceivable, a thing of serious consideration. Buildings, yards, and inclosures, which are much let down, and gone to decay for want of timely reparation, incur a very great expense to raise them again to their proper state. And when great accuracy of valuation is called for, as where the purchase value of an estate is left to reference, and when the tenants are not bound, or if bound are not able, to put them in the required state, it becomes requisite to estimate the expense which each farm, in that predicament, will require to put it in sufficient repair, so as to bring the whole into a suitable state of occupation. This comes, however, more properly under the head of deductions, encumbrances, and outgoings, which are considered below. The same principle of valuation as the above holds good too in ordinary cases.

In speaking of encumbrances and deductions, it is said, that it appears, by a long lease, that the fee-simple value of an estate may be in effect annihilated. Even a lease for lives, with a mere conventional rent, may reduce it to nearly one-third of its fee-simple value. And every other kind of lease, if the rent payable be not equal to the fair rental value at the time of the disposition, is an encumbrance, even to a purchaser who has no other object in view than that of securing his property on land, and receiving interest in rent for the money laid out. If personal convenience be immediately wanted, or improvements required to be done, a lease, though the tenant pays a full rent, becomes an obstacle to the purchase, and is consequently to be considered in fixing the value. And an error, which is not unfrequently committed in estimating the encumbrance of a lease for
for a term of years, is here, it is said, to be noticed. The difference between the lease rent and the full rental value, encumbered with the same outgoings and repairs as the lease rent, being ascertained, it is multiplied by the number of years unexpired, and the produce is in full deducted from the value of the land, free from such encumbrance. But from the produce, thus found, ought to be deducted half the interest thereof, during the said number of years, together with that of one half-year over, if the rent be payable half-yearly, or of one year, if payable annually. For all that a purchaser has a right to expect is to receive the full rent for his land, during the continuance of the lease. The tenant pays him what the lease stipulates; and if the seller were to make up the remainder, at the end of every six or twelve months, whenever the tenant is to pay his part, the purchaser would receive the full rent, the same as if no encumbrance had existed. But if the seller pay down the whole sum in ready money, at the time of the sale, which in effect he does, he is certainly entitled to some discount for prompt payment. Thus, supposing the difference of rent, occasioned by the lease, to be ten pounds a year, and the length of the term to run to be ten years, the produce would be one hundred pounds. And supposing, for the sake of calculation, the stipulated payments to be annual, the interest to be deducted would be the half of fifty pounds, (the interest of one hundred pounds for ten years, at 5 per cent.) with the half of five pounds (one year's interest), together amounting to twenty-seven pounds ten shillings; which being deducted from one hundred pounds, the gross produce, leaves seventy-two pounds ten shillings, the clear sum to be deducted. And the truth of this rule of calculation may, it is thought, be familiarly proved; for if the seller were only to pay the deficiency of rent, as it should become due, he would, during the first year, hold the whole hundred pounds in his hands, the interest of which, at 5 per cent., is 51.

| The first ditto | 500 |
| The second ditto | 410 |
| The third ditto | 300 |
| The fourth ditto | 120 |
| The fifth ditto | 100 |
| The sixth ditto | 40 |
| The seventh ditto | 30 |
| The eighth ditto | 20 |
| The ninth ditto | 10 |

27 10 0

In respect to tithes, where in valuing lands they are considered as tithe-free, the tithe or modus, if any, requires to be deducted, as an encumbrance; and from the great variation in the values of tithes and moduses, according to custom, and plans of occupation, it is the plainest way of proceeding to value all lands as free of tithe, and afterwards to make an allowance for whatever they may be estimated to be worth. In regard to taxes, too, although it may be called the custom of the country for proprietors to pay the land-tax, and the occupier all the other taxes; yet this is not the universal practice; nor is it, in valuing an estate on sale, to be let at will, a matter to be inquired into. The annual amount of payable taxes, and other outgoings, are the facts to be ascertained: for who soever discharges them, they come as a burden upon the gross value of the lands, out of which they are payable. For if a tenant pay them, his rent is, or ought to be, estimated and fixed accordingly. But if an estate on sale is already let under lease, for a term to come, it is highly requisite to ascertain what parts of the annual outgoings and repairs are discharged by the tenants, and what the proprietor will be liable to, during the term to run. The land-tax, where it still exists, is extremely uncertain as to its value; and the poor-tax is generally varying in different situations. The church, highway, and county rates are, taking them on a par of years, liable to local uncertainty, and are consequently levied to be adjusted, by a value of lands. And the fixed payments, or rent charges, such as chief rents, quit-rents, annuities, endowments, schoolmasters' salaries, charitable donations, and others of the same kind, to which an estate is liable; also repairs of public works, buildings, roads, &c. incumbent on the estate, are subjects of inquiry and estimation; as well as the ordinary repairs. Further, too, the hazard or risk under valutation, as that of their being liable to be inundated in summer, or to be torn away by floods at any season, is entitled to mature consideration. For although these evils may generally be remedied by river-breaks and embankments, the erecting of them is mostly attended with great expense; and the estimated value of this becomes, in course, a fair deduction to be considered by the land-value. It is noticed that there are two practical methods of valuation, with respect to taxes and other outgoings, as in regard to tithes; namely, either to set down the gross value of the lands, and then to deduct the outgoings; or to view them under their encumbrances, and to estimate in a summarily way their net rental value. The latter is the more general, but the least accurate, manner of performing the business.

This, it is laid, is what relates to the purchase value of the lands, but that, appertaining to an extensive estate, there are generally other valuable considerations; as minerals and foils, whether metals, fuels, calcareolities, or groferer earths; waters, whether they are valuable for fisheries, ditches, mills, domestic uses, or the irrigation of lands; and timber, as of woods and hedge-rows. Buildings, too, that are not let with the farms, but which bear rent, independent of the lands; which, when scattered over an estate, may well be considered as belonging to landed property. To these may be added, the estimated value of evident improvements: and, lastly, the abstract rights which arise out of appropriated lands, or their appurtenances, as the right of commonage, which is generally of some value, even when commons be open, and may be of more, when they shall be inclosed; provided the cost of inclosure do not turn out to be more than the extra value of the appropriated lands, above that which naturally or fortuitously attends the lands of the common right in their open state. The right of seigneur to fee-farm rents, or other chief rents, payable to the seigneur of lands on sale out of the lands of other proprietors. These rents, though small, are of certain value in themselves; and the idea of seigneurity, which they convey to the minds of some, may be worth more than the pecuniary value; which indeed, where the sums are very small, as is often the case, is much lowered by the expense of collecting them. The rights of feudality, or manorial rights, are at present, if not in their original, very different from those last mentioned; and the value of which is to be estimated by the quit-rents, fines, heirlooms, advowments, and small payments, which long custom and a train of circumstances have attached to the given court. And beside what relates to the appropriated lands of the manor, the lord has a profit arising from the comminable lands, if they lie within it, as lord of the soil; which cannot be broken without his permission: hence the minerals and foils which it covers belong to him, as well as the timber which grows upon the waste, and the waters
winters that are connected with it. Moreover, in ordinary cafes, he is lord of the game which inhabits or roams upon his manor. This being, however, a right of pleasure rather than profit, has no fixed standard of estimation. The right of title, when attached to an estate, is the most definable of abstract rights arising out of landed property. For as far as the right extends, whether to a lay rector or a vicarial proprietary, the lands which it covers becomes in effect title-free; as every judicious proprietor incorporates the rents of the title with those of the lands out of which it is payable; thus, if the right, as it generally is, be rectorial, freeing them wholly from the encumbrance of tithes, as a tax on improvements, and as an obstacle to the growth of grain. The right of advowson, or the privilege of appointing a pastor to propagate religion and morality upon an estate, properly enough belongs to its possessor; as no other individual is so intimately concerned in the moral conduct of its inhabitants. The right of representation, or election, or the appointment, in whole or in part, of a legislator to assist in promoting good order in the nation at large. And what else of the community, it is asked, can produce a fairer claim to this right than the proprietors of the country? The value of these rights is left for others to estimate and determine. See Timber and Tithes.

The chief circumstances to be considered having thus been pointed out, and their importance and influence explained, in concluding the subject it may be observed, that the difference between the particulars that give value to a landed estate, and the encumbrances to which it is liable, is the net value of the property under valuation.

VALUE, Valor, in Commerce, the price or worth of any thing.

Value, Intrinsic, denotes the proper, real, and effective worth of any thing; and is used chiefly with regard to money: the popular value of which may be raised and lowered at the pleasure of the prince; but its real or intrinsic value, depending wholly on its weight and fineness, is not at all affected by the lamp or impression thereon.

It is generally on the foot of this intrinsic value, that species are received in foreign countries; though in the places where they are coined, and where the sovereign power makes them current, they sometimes pass for much more.

It is, in good measure, on the difference of those two values, one of which is, as it were, arbitrary, and the other, in some sort, natural, that the difference of exchanges depends; and those still rising and falling, as the rate at which a species is current, comes nearer or farther off the just price of the metal of which it consists.

Value, in Bills of Exchange, is used to signify the nature of the thing (as ready money, merchandizes, bills, debts, & c.) which is given, as it were, in exchange for the sum specified in the bill.

From four different manners of expressing this value, some distinguished four kinds of bills of exchange. The first bears value received, simply and purely, which comprehends all kinds of value; the second, valued received in money or merchandizes; the third, value of myself; and the fourth, value underfoot.

The first is dangerous, and the fourth but little used: accordingly, to have the value well expressed, and to prevent the ill consequences of overfights therein, it is well provided by the French ordinance of 1673, that bills of exchange should contain the name of the person to whom the contained sum is to be paid; the time of payment; the name of him who has given the value; and whether it was received in money, merchandize, or other effects.

VAL, Valor, or Valen'tia, in Law. Well gives us a nice difference between value and price; the value (lase he) of things in which offences are committed, is usually comprised in indictments; which seems necessary in theft, to make a difference from petty larceny; and in trespasses, to aggravate the fault and increase the fine.

But no price of things Fere nature may be expressed, as of deers, hares, &c. if they be not in parks or warrens. And where the number of things taken is to be expressed in the indictment, as of young doves in a dove-house, there must be said preti, or Ad valentiam: but of divers dead things, ad valentiam, and not pretii: of coin not current, it shall be said preti; but of coin current, neither pretii nor ad valentian; the price and value being certain.

VALVE, VALVULA, formed from valve, folding-doors, in Hydraulics, Pneumatics, &c. is a kind of lid, or cover, of a tube or vessel, so contrived as to open one way; but which, the more forcibly it is prefed the other way, the closer it shuts the aperture: so that it either admits the entrance of a fluid into the tube or vessel, and prevents its return; or admits it to escape, and prevents its re-entrance. For water, these valves are the belft which intercept the passage leaf; and none appear to answer this purpose better than the common clack-valve of leather, which is generally wireless, or divided into two parts; but it is sometimes composed of four parts, united so as to form a pyramid, nearly resembling the double and triple valves which are formed by nature in the hearts of animals. A board, or a round flat piece of metal, divided unequally by an axis on which it moves, makes also a very simple valve. Where a valve is intended for intercepting the passage of fluids, it must be of metal: such a valve is generally a flat plate, with its edge ground somewhat conically, and guided in its motion by a wire or pin. For air, valves are commonly made of oiled silk, supported by a perforated plate or grating.

Valves are of great use in the air-pump and other wind-engines; in which they are ordinarily made of pieces of bladder, or oiled silk.

In hydraulic engines, as the emboli of pumps, they are frequently of leather; the figure round; and they are fitted to shut the apertures of the barrels or pipes.

Sometimes they are made of two round pieces of leather, inclosed between two others of brass; having divers perforations, which are covered with another piece of brass, moveable upwards and downwards, on a kind of axis, which goes through the middle of them all.

Sometimes they are made of brass, covered over with leather, and furnished with a fine spring, which gives way upon a force applied against it: but, upon the ceasing of that, returns the valve over the aperture. (See Pump.) See also for the construction of different sorts of valves for the buckets of pumps, Délargiers, Exp. Phil. vol. ii. p. 156, &c.; and for the description of a new valve by M. Belidor, ibid, p. 180.

VALVE, in Anatomy. See VALVULA.

Conflantin Varolius, a Bolognefe, and phyfician of Gref-
striking with too much violence against that of the lower: and Mr. Winflow, who has considered it very diligently in the Memoirs of the Royal Academy of Sciences, is much of the same opinion.

But as it gradually dwindles in children, and at length becomes quite lost in adults, till diminishing as the foramen ovale does, it should seem to have some other office, and that chiefly regarding the circulation of the blood in the fetus.

In effect, by means of it, M. Winflow reconciles the two opposite systoles of the circulation of the blood in the fetus. See Circulation of the Blood, and Foetus.

Valve, in Gardening, the divided parts of a feed-veffel, or properly the external division of a dry feed-veffel, such as a capulce or pod; as in the pea, bean, vetch, and many others, which, when ripe, splits into two or more divisions, in order to throw out the contents, each of which divisions is denominated a valve. The valves of culinary vegetables are of several different kinds, according to the number of divisions, but principally of the univalve and bivalve kinds.

Valverde, or Val Verde, in Geography. See Is.

Valverde, a town in Spain, in New Castile; 20 miles S. of Cuenc.

Valverde del Camino, a town in Spain, in the province of Seville; 17 miles N.E. of Moguer.

Valverde de Fresno, a town in Spain, in the province of Leon, on the borders of Portugal; 24 miles N.N.W. of Cordia.

Valuki, a town of Raffia, in the government of Voronez; 103 miles S.S.W. of Voronez. N. lat. 50° 2'. E. long. 37° 44'.

Valuntuown, a town of the rate of Connecticut; 10 miles N.N.E. of Norwich.

Valvula, Valve, in Anatomy, a name given to various parts in the body. See Valve.

Valvula Collis, or Ile, the valve placed at the communication of the large and small intestines. See Intestine.

Valvula Conniventis, folds of the mucous membrane of the small intestine. See Intestine.

Valvula Eutachii, Nobilis, or Recticulata, a small fold at the entrance of the inferior vena cava into the right auricle. See Heart.

Valvula Magna Cerebri, or Veiculifera, a part of the brain. See Brain.

Valvula Mitralis, the valve of the left auriculo-ventricu-lar orifice of the heart. See Heart.

Valvula Semilunaria, or Discoides, valves placed at the entrance of the aorta and pulmonary artery. See Heart.

Valvula Tricuspidales, or Triglobina; the valve of the right auriculo-ventricular opening of the heart. See Heart.

Valvula Venarum, folds of the internal membrane of the veins, preventing the reflux of the blood. See Heart.

Vama, in Ancient Geography, one of the navigable rivers of India, which discharged itself into the Ganges. Pliny.—Allo, a town of Spain, in Bautica, belonging to the Bautic-Celtic. Ptolemy.

Vaman, in Mythology, a name or title of the Hindoo deity Vishnu. It means a dwarf; and was applied in consequence of an incarnation of Vishnu in this humble form. See the next article.

Vamanavatara, one of the ten grand incarnations of Vishnu; called, by way of pre-eminence, daftavatara, or the ten deities, to distinguish them from others of the same deity of less importance. As noticed under the article Vishnu, this manifestation was the fifth of the ten; but the first that occurred after the golden or virtuous age of the Hindoos. It was followed by a less virtuous age, in the course of which Mahabeli, a monarch reasonably virtuous, became so elated, that he omitted the essential ceremonies to the gods; and Vishnu, deeming it expedient to check the influence of such an example, resolved to punish the arrogant rajah. He, therefore, condescended to become the son of Kasyapa and Aditi; and, as the younger brother of Indra, was incarnated in the person of a wretched Brahman dwarf. (See Indra and Kasyapa.) Appearing before the king, he asked a boon; which being promised, he demanded as much as he could pace in three steps. Nor would he desire farther, though urged by Beli to demand something more worthy of the donor.

Mahabeli, it would appear, had resorted to some of these procresses; and the boon asked and yielded, was, as usual with mighty rajas, the sovereignty of the universe, which includes the three regions of the earth, heaven, and hell. To avert the effects of the abuse of this power, dangerous even to the gods, and to refuse their sovereignty, Vishnu resorted to the artifice we are describing.

On obtaining the king's promise, the dwarf required a ratification of it; which was done, as is still practiced, by pouring water on the hand of the suppliant. This Beli proceeded to do, though warned of the consequences; for not to ratify that for which his royal word was pledged.

As the water fell into his hand, the dwarf's form expanded till it filled the world; and Vishnu now manifesting himself, deprived Beli at two steps of heaven and earth; but he being, in some points, a virtuous monarch, left Patala, or the lower regions, still in his dominion. (See Patala.)

In this character, Vishnu is sometimes called Trivikrama, or Trivikara, meaning the three-step-taker. Beli, as king of the infernal regions, seems to correspond with Tama; which fee. Sir William Jones deemed this king the same with the Belus of western history. See Belus, and Mahabeli.

Writers of the sect of Vaishnava maintain, that the ratifying stream poured on the hand of Vishnu, was the origin or source of the river Ganga, or Ganges; which falling from the hand of the miraculous dwarf, descended thence upon his, now Vishnu's, foot; and, hence, expanding like its fount, it gushed a mighty river, and was received on the head of Siva. In pictures and carvings of the latter deity, the goddes Ganga is frequently seen half concealed in the folds of his hair, and Siva is hence named Gangadhara, or Ganges-bearer: a name assumed also by a class of itinerants who fell that holy water through the streets of all Indian cities; it being among Hindoos equal, in fum-expelling potentiality, to the holy water of papacy. This mythological source of the blessing and blessed river is a favourite subject with Hindoo poets.

In the Hindoo Pantheon, where this article is partly taken, are many legends connected with it.

In pictures of this avatara, the dwarf is usually represented receiving the water from the hand of Beli, through a spouted vessel; sometimes accompanied by the evil counsellor Indra, or Sakra, who is represented either with only one eye, or holding his hand before the other. As the regent of the planet Jupiter, named Vishkapatî, is the counsellor or preceptor to the gods and Suras; to Sakra is the adviser of the demons or Asuras; and is constantly watchful in counteracting the divine beings, and their endeavours for the good of man; and the pious endeavours likewise of holy men. To prevent the conferring power in this avatara from accomplishing the projected end, in the punish-
ment of impiety and arrogance, personified in Beli, Sakra apprized him of the deceit under which he was promoting the universe away. But as the monarch had too much pride to recant his royal word, the evil counsellor assumed the form of a mosquito; and intimidating himself into the spout of the vessel through which the satirical stream was to pass, arrested its passage; when the dwarf, taking a straw to clear it, thrust out the eye of the gnat, a defect ever after retained by Sakra in all shapes. It is said to indicate the half enlightenment of evil counsellors: still, when the one-eyed admirer of ill should be the thousand-eyed god, has not been explained. Nor will it, perhaps, be deemed worth while to enter into any lengthened explanation of the apparently ridiculous fables mentioned in this article; though we believe they might be explained from a consideration that all Hindoo history, religion, arts, and science, are buried in a mass of mythological legends. We will just mention, that the fabulous source of the Ganges, whether from the head of Siva, or from the foot of Vishnu, the latter being the principle of humidity, the former of heat, is merely a physical dispute between what in Europe would be called Neptunits and Vulcanists, but what in India assumes the form of theological controversy. Whether the Ganges be of volcanic origin, or descends from the eternal fountains of Nepaul, is perhaps the point here disputed between the Saivas and Vaishnavas. (See of this under the articles Siva and Siva.) As to the mosquito, Indra is the god of showers, regent of the firmament; closely allied to Vishnu, air being a form of humidity; and the mosquito partakes, like Vishnu, of both its forms; it is born, or repoves, like the god, in water, and lives in air. But we shall pursue these mythological allegories no farther.

One of the eighteen sacred poems, called Purana, is named after this avatar, (see Purana,) and details a great mass of poetical incident connected with it. The reader may perhaps smile in hearing that England is the supposed theatre of several of the incarnations of Vishnu, and of this of Vamana among them. On this point, we refer to the second article of the 11th volume of the Asiatic Researches.

VAMBA, in Geography, a river of Angola, which runs into the Coanaza, near Caboio.

VAMIGELA, in Ancient Geography, a town of Africa, in Mauritania Caxaricanis. Ptol.

VAM-KOSSE, in Geography, a small island in the Chinefne archipelago, where the celebrated St. F. Xavier was buried; 62 miles S.W. of Macao.

VAMPYRE, in Mythology, a name given to an imaginary demon, which, it is pretended, sucks the blood of persons during the night, and thereby destroys them. These vampires were supposed to animate the bodies of dead persons, which when dug up were found fresh, florid, and full of blood. Those who were killed by vampires were said to become vampires themselves: the way to destroy them was to drive a stake through them, at which time they would give a horrid groan; and to burn the body to ashes. This species of superstition occasioned, some years ago, great disturbances in Hungary and other places.

VAMPYRE, in Zoology, the Vespertilio vampyrus of Linnaeus, called also tormeas, and by Buffon la rougette and la rouget. is a species of bat with large canine teeth, four cutting-teeth above, and the same below; sharp black nose; large naked ears; tongue pointed, and terminated by sharp aculeated papilla; external toe detached from the membrane; the claw flrong and hooked; five toes on the hind-feet; talons very crooked, strong, and compressed sideways; no tail; the membrane divided behind quite to the rump; varying in colour, some being entirely of a reddish-brown, and others dusky; and also in size, some having the extent from tip to tip of the wings four feet, others five feet four inches; and others extending farther than a man can reach with his extended arms. This animal inhabits Guinea, Madagascar, and all the islands from thence to the remotest in the Indian ocean. They are also found in New Holland, the Friendly Islands, the New Hebrides, and New Caledonia. They fly in flocks, obfuscating the air with their numbers; beginning their flight from one neighbouring island to another, immediately on fun-fet, and returning in clouds from the time it is light till fun-rice, and during the day lodging in hollow trees: they live on fruit, and are so fond of the juice of the palm-tree, that they will intoxicate themselves with it till they drop on the ground. In New Caledonia, the natives use their hair in ropes, and in the taffels of their clubs. The Indians eat them, and declare their flesh to be very good. The French who live in the Ile de Bourbon, boil them in their bouillon, to give it a relish. While they are eating, they make a great noise; their feet and their bite, relishance, and fierceness, very great when taken. The ancients had some knowledge of these animals, and M. de Buffon apprehends, that from the account of them the poets formed their fictions of harpies. Linnaeus calls this species vampyre, conjecturing it to be the kind which draws blood from people in their sleep. The bat is so dexterous a bleeder, as to intoxicate its aculeated tongue into the vein without being perceived, and then suck the blood till it is fatigued; all the while fanning with its wings, or agitating the air so as to cast the sufferer into a silll funder sleep. In certain parts of America they have destroyed all the great cattle introduced there by the missionaries. Pennant's Hist. Quadrupeds, vol. ii. p. 548, &c.

VAMPYRE is also a name given by M. de Buffon to the vespertilio spectrwm of Linnaeus, or bat with a long nose, large teeth, long, broad, and upright ears; with a long, conic, erect membrane at the end of the nose, bending at the end, and flexible; hair on the body cinerous, and pretty long; wings full of ramified fibres; a membrane extending from one hind leg to the other; no tail, but three tendons extending from the rump, and terminating at the edge of the membrane. This animal inhabits South America, lives in the palm-trees, and grows very fat. Buffon supposes it to be the species that sucks human blood. Pennant. See Andira.

VAN, VAN, of Vanent, (of the French avent, or avant, before,) is the term used in composition with several words in our language. As,

VAN-Couriers, are light armed soldiers, sent before armies to beat the road, upon the approach of an enemy.

VAN-Poufs, a ditch dug without the counterfcarp, and running all along the glaciers; usually full of water.

VAN, or Vannt-Corps. See Corps.

VAN, or Van-Guard. See Guard.

VAN-Lay. See Vaunt.

VAN, in Agriculture, a name sometimes used to signify an implement or contrivance for winnowing, or cleaning corn with. See Winnowing Machine.

VAN, in Sea Language, denotes the foremost division of any naval armament, or that part which usually leads the way to battle, or advances first in the order of failing. See Engagement and Fleet.

VAN, in Mining. To make a van, is to take a handful of the ore or tin-fluit, and bruife, wash, and cleanse it on a shovelf; then, by a peculiar motion of the shovelf, to shake and throw forth upon the point of it almost all the ore that is freed from waife. This operation being repeated, the ore
is collected and referved, and from thence they form an
effimate how many tons of copper ore, or how many hundred
weight of block-tin, may be produced out of one hundred
facks of that stuff, of which the ore is made. Pryce's

Van. (Artemia), in Geography, a city of Armenia, situated
five miles from a lake of the same name. It is surrounded
with a good wall and deep ditch, and has four gates. On the N.
is a castle, built on a high and perpendicular hill, which rifes
abruptly from the plain. This fortress can only be ap-
proached by one passage, so narrow as to admit only two
persons abreast; it is always supplied with corn and military
stores, and in the centre of the work stands the palace of the
aga of the janizaries. This city is abundantly furnished
with water and provisions; the houses are built of stone and tile;
the streets are spacious and well paved, and the population is
said to number 50,000 souls, of whom number two-thirds
are Turks, and the rest Kurds and Armenians. The air is
pure, and the environs of the city delightful. It is four
days' journey from Bayazid, a city of one of the Turkish
pachalics of Armenia, twelve from Erzeroom, another of
them, five from Batsik, and about the same distance from
Khoi.

The lake (Arshis of Ptolemy) is about 168 miles in cir-
cumference; and although the water is more sweet than that
of Urumea, it is so brackish as to be unfit for the common
purposes of life, according to the common opinion, though
some fay it is very good. There are four islands in the lake,
one of which is an Armenian monastery, and 300 pilgrims.
The traffic of the surrounding country is carried on by about
20 or 30 small boats, N. lat. 58°. E. long. 43° 55'.

On the N.W. side of the lake, three days' journey from Van, is
Argih (the ancient Arzes), containing 6000 inhabitants.
And in a westerly direction from Argih is Moodh, the ancient
Moxocon, occupying a small eminence, washed by the
Emirates, over which is a bridge of 15 arches, badly built,
and thinly inhabited, but situated in a country entirely fertile
and populous. The natives of this district, amounting to
about 80,000 souls, of which 12,000 are Yezidis, are a
base and degenerate race. Tobacco and maconia are exported
from hence in considerable quantities. McKinnon's Map
of Persia.

Van, a town of Norway, in the province of Aggerhus;
20 miles N. of Christiana.—Alto, a river of South Wales,
which runs into the Bristol Channel, about 5 miles below
Cowbridge, in Glamorganshire.

VANAHON, a river of America, which runs into lake
Michigan, N. lat. 42° 52'. W. long. 89° 10'.

VANAMALI, in Mythology, a name of the Hindoo
god Krijna; which see. This name is said to be derived from
a pendent garland of flowers, with which this
proceicmea deity is usually decorated. In the following
paffage he contrives his appearance, thus decorated, with that of
Mahefa, or Siva.

"I am not the terrible Mahefa: a gar-
land of water lilies, with subtile threads, decks my thou-
ders; nor ferpents with twisted folds: the blue petals of the
lotos glitter on my neck; not the azure gleam of poison:
powdered sandal-wood is sprinkled on my limbs; not pale
ashes." This is addrefed to his enchanting mulletes Radsb,
under which article a farther extract from the same "Song"
will be found. The gleam of poison on his neck alludes
to his having drank the poison produced by the churcan of
the ocean, as described in our articles KURMAVATARA and
SHITAKOONTHA; and being powdered with ashes, is noticed
in the latter part of the article SECTS of Hindoo.

VANANCOUPAN, in Geography, a town of Hindoo-
flan, in the Carnatic; 15 miles S.W. of Trivady.

VAN-BALEN, in Biography. See BALE.

VANBRUGH, Sir John, a dramatic writer and an
architect, was a descendant of an ancient family in Chehire,
and was first known to the public as an officer in the army,
being confidered as a man of wit and a pleasant companion.
The first play which he finifhed was "The Relapse,"
and it was acted with great succefs in 1697. This was
followed, in the succeeding year, by "The Provoked
Wife," and in the fame year appeared his "Epif",
blending humour with satire and useful morality. In
1702 appeared his "False Friend," and he was now
knighfed, and advanced to the polt of Clarenceux king-
arms. When a theatre was erected in the Haymarket,
it was placed under the management of Vanbrugh and
Congreve by Betterton and the other paten ties; and it
was opened in October, 1705, with a comedy by Vanbrugh,
titled "The Confederacy," which, though the best
written, is the most licentious of this author's dramatic pro-
ductions, besides three more pieces, imitated from the
French; but finding the concern irkome, he difpofed of
his share. The popular comedy of "The Journey to
London" was begun by him, but finifhed by Cibber.
In speaking of Vanbrugh, Pope has blended praise with cen-
scure, when he fays,

"How Van wants grace, who never wanted wit.'

His taste and talents as an architect were firft exhibited
in the theatre in the Haymarket, for which he obtained sub-
scriptions; and to him was committed the erection of the
palace of Blenheim, voted by the nation to the duke of
Marlborough. In 1716, king George II. appointed him
surveyor of the buildings at Greenwich-hospital, com-
troller-general of the royal works, and surveyor of the gar-
dens and waters. On a visit to France, he employed himfelf
in taking views of the fortifications in that kingdom, which
caufed him to be apprehended and committed to the Bafville;
but when he was obferved to amufe himfelf in prison by
making sketches of comedies, he was liberated, as a har-
rifing perfon, without any application from home in his favour.
As an architect, he was engaged to build feveral great
houfes in England, besides Blenheim; but in this capacity
he has unfortunately been transmitted to posterity rather as an
object of ridicule than of admiration. Mr. Walpole has
paffed upon him a fevere cenfure, when he fays that "he
wanted all ideas of proportion, convenience, and propriety.
He undertook vafli designs, and compos'd heaps of little-
nels. The fyle of no age, no country, appears in his
works; he broke through all rule, and compounded for it
by no imagination. He feems to have hollowed quarries
rather than to have built houfes; and should his edifices, as
they feem formed to do, outlive all record, what architec-
ture will posterity think was that of his anccftors?" The
following epigrammatic epitaph was written for Vanbrugh
by Dr. Evans, and accords with the above character of his
works:

"Lie heavy on him earth, for he
Laid many a heavy load on thee.'

Notwithstanding the obloque above cited, some modern
amateurs have vindicated the character of Vanbrugh's archi-
tecture, particularly that of Blenheim, admiring its gran-
deur, and the magnificence of the whole, as well as the
picturesque variety displayed in this and in other of his
buildings.

In society Vanbrugh bore a respectable character, and
had no personal enemies. Swift and Pope have expreffed
their wilh, that they had not indulged their raffleony against
one
with inhabitants, they soon afterwards pursued an eastern route, and driving out the Scavi, who occupied the territory that lay between the Bosphorus Cimmerius and the Tanais, and taking possession of their country, assumed the appellation of the ancient inhabitants. Some of them, several ages after, in the reign of Mauritius, which began in 586, settled in Dalmatia and Illyricum, to which they gave the name of Scalvonia; and others migrated to the eastern parts of Dacia beyond the Danube, a province which comprehended the countries now denominated Transylvania, Moldavia, Walachia, and the eastern parts of Upper Hungary. From those who remained in Germany, the present Poles and Bohemians are generally said to have derived their origin; but the Vandals, who, under Godegisius, their king, entered Gaul, and afterwards settled in Spain and Africa, came, as Procopius says, from Dacia and the vicinity of the Palus Mæotis. As the Vandals were a Gothic nation, they retained the customs, manners, religion, and form of government, that subverted among the Goths. The first of their kings mentioned in history is Godegisius, under whose command they entered Gaul in 406. He was succeeded by Gunderic, who puffed, in 409, from Gaul into Spain, and settled in Galiaca. His successor, Geniferic, abandoned Spain in 428, and passed with his vaifes into Africa, which the Vandals possessed till the year 533, when, under Gelimer, an end was put to their dominion by Belisarius, and Africa was reunited to the empire. Although the Vandals are said to have been inferior in power and courage to all the other barbarous nations, they nevertheless made themselves masters of the most fertile provinces of the empire. They became profiteers to Christianity at the same time with the Goths, embracing the sentiments of Arius, in common with the other Goths, and becoming irremovable enemies to the Catholic church. Salvianis extols their continence and chastity.

It was about the year 166 that they began to be troublesome to the Romans, in the reign of M. Aurelius and Lucius Verus; when forming an alliance with other barbarous nations, they invaded the empire, plundered several cities, and, having put to flight the Roman armies, committed every where unparalleled ravages. Having taken possession of Pannonia, they retained it till they were expelled in the year 170, by M. Aurelius. They afterwards entered into an alliance with the Romans; and in 180, it was one of the articles of peace concluded between the emperor Commodus and the Alemans, that they should not make war upon the Vandals. In the second year of Aurelian's reign, A.D. 271, the Vandals puffed the Danube, laying waste the neighbouring provinces; but Aurelian compelled them to retire with great precipitation, and having overtaken them in their retreat, obliged them to sue for peace; which was granted, on condition of their delivering, as hostages, the sons of their two kings, and other persons of distinction. Two thousand of their best men were incorporated among Aurelian's own troops. After his death, they entered Gaul; but they were defeated by Probus in several battles, and obliged to withdraw themselves at the approach of the Roman army. Refuting the infatuts of the Roman soldiers, they made an attempt to recross the Rhine, but sustained a great defeat; and proving unfaithful to their engagements, after having obtained peace, Probus marched against them, put many to the sword, took a great number of prisoners, among whom was their king, and afterwards sent them into Britain, where they are supposed to have settled in the neighbourhood of Cambridge, giving name, as it has been said, to the village of Vandalsburg. Probus allowed several of them to settle in Thrace, which was almost depopulated.
The next mention of the Vandals that occurs is in the eighth year of the reign of Diocletian, when they engaged in a war with the Goths. About the year 406, or the twelfth of Honorius's reign, they made an irruption into Gaul; but in attempting to cross the Rhine, they were slaughtered by the Franks; and being relieved by the Alans and Suevians, they obliged the Franks to retire, and actually entered Gaul. Having passed through Germania Prima and Gallia Belgica, they took possession of Aquitania, the most fertile and opulent province of Gaul; and advancing as far as the Pyrenean mountains, they ravaged all the neighbouring provinces. Conflantinie, however, having been proclaimed emperor by the British legions, passed from Britain into Gaul with a powerful army, and defeated the Vandals and other barbarians in several battles, and at length granted them peace, without fluctuating as a condition their leaving the country. The Vandals soon afterwards took up arms, and seized several cities of Gaul, under Maximus, who assumed the honour of being emperor, in opposition to Conflants, the son of Conftantine. Finding themselves more vigorously opposed than they expected, they marched towards Spain, which was then in a distracted state, and in the year 409 entered the country; and before the end of the year 410, obliged Conflants to abandon it. After having reduced the provinces of Spain to a deplorable condition, they concurred with the Alans and Suevians in dividing the country between them, and devoted themselves to the operations of agriculture. In this partition, Galicia fell to the share of the Vandals and Suevians, and Beticca to those Vandals that were called Silingrians, who are supposed to have given to their portion the name of Vandalum, afterwards changed into Andalusia. In the year 416, Valla, king of the Goths in Gaul, having made peace with the Romans, undertook to drive the barbarians out of Spain; and in 422, Honorius, having heard of the reduced condition of the Vandals in Spain, in consequence of the conduct of Valla, determined to recover the provinces which they possessed. But his attempts for this purpose were rendered ineffectual by a signal defeat. In consequence of this victory, the Vandals became powerful, established themselves in Andalusia, almost destroyed the city of Carthage, and extended their ravages to the Balearic islands. In the year 428 or 429, Genferic, the king of the Vandals, assembled them together, with their wives, children, and effects, and abandoning Spain, crossed the straits of Gibraltar, and landed in Africa. After their arrival, they gained several victories over the Romans, and so overran the country, that Cirta and Carthage were the only two strong places in Africa possessed by the Romans. At length, viz., A.D. 435; a peace was concluded between Valentine and Genferic; but though the moderation of the Vandal sovereign was highly extolled, he nevertheles seized Carthage, A.D. 439, whilst the Romans were engaged in a war with the Goths in Gaul; and thus the Vandals remained masters of the proconsular province of Byzacene, Gætulia, and part of Numidia. The capture of Carthage created an alarm in Italy; and preparations were vigorously made for putting Rome in a state of defence, and for inducing all ranks of people to take up arms for the preservation of the country. In the year 455, Genferic took and plundered Rome; and carried over with him into Africa the empress Eudoxia, and her two daughters Placidia and Eudocia, where he detained them till the year 462, marrying Eudocia to Hunferic, his eldest son, who had by her Hilderic, afterwards king of the Vandals in Africa. Upon his return to Africa, Genferic subdued the countries that were still in the hands of the Romans. The emperor Majorianus, being disappointed in his views and plans for the conquest of Africa, concluded a peace with Genferic, who, after the death of the emperor in 461, sent a powerful fleet to pillage the coasts of Sicily and Italy, and even made himself master of Sardinia. He afterwards took occasion to ravage Peloponnesus and the Greek islands, whence were carried off many captives. Leo sent the affront offered by Genferic to the eastern empire, and prepared for revenge by carrying the war into Africa. In the progress of his powerful armament, Sardinia and Tripoli were recovered from the Vandals; but whilst Genferic solicited of the Roman admiral a truce of five days for settling the terms of his submission to Leo, he contrived to destroy the whole Roman fleet that was armed against him. In the year 475, he concluded a peace with Zeno, the successor of Leo, who, renouncing all claim to the provinces of Africa, yielded them for ever to Genferic and his descendants. Soon after this event, Genferic died, A.D. 477; but the peace was religiously observed by his successor, till the reign of Justinian, who, espousing the cause of Hilderic against his brother Gimer, who had usurped the crown, drove the Vandals out of Africa, and reunited those provinces to the empire. (See Belisarius.)

Africa had been their empire, it now became their prison; nor could they entertain a hope, or even a wish, of returning to the banks of the Elbe, where their brethren, of a spirit less adventurous, still wandered in their native forests. In the country between the Elbe and the Oder, several populous villages of Lusatia are inhabited by the Vandals; they still preserve their language, their customs, and the purity of their blood; support, with some impatience, the Saxon or Prussian yoke; and serve with secret and voluntary allegiance the descendant of their ancient kings, who, in his garb and present fortune is confounded with the meanest of his vassals. The name and situation of this unhappy people might indicate their descent from one common stock with the conquerors of Africa; but the use of a Sclavonian dialect more clearly represents them as the last remnants of the new colonies, who succeeded to the genuine Vandals, already scattered or destroyed in the age of Procopius. Anc. Un. Hist. vol. xvii. Gibbon's Hist. Rom. Emp. vol. i. vi. vii.

VANDELEVILLE, in Geography, a town of France, in the department of the Meurte; 9 miles N.W. of Mirecourt.

VANDELLIA, in Botany, was so called by Linnaeus, at the suggestion of Browne, after his correspondent Dr. Dominick Vandelli, who published at Padua, in 1761, a quarto volume in Latin, on the hot-baths of that neighbourhoood, with notices of some cryptogamic plants inhabiting therein. Being afterwards appointed superintendent of the royal botanical garden at Lisbon, he published there, in 1771, a small Fluctus Plantarum, dedicated to Sir Joseph Banks, describing some supposed new genera, and several new species, with a few figures. Dr. Vandelli is also the author of one or two zoological traits; and he wrote against Haller's doctrine of the insufficiency of the tendons and membranes, to the great displeasure of that illustrious physiologist. This veteran in botanical science visited London, in 1815, at a very advanced age, and, if we mistake not, is since dead.—Linn. Mant. 12. Schreb. Gen. 419. Willd. Sp. Pl. v. 3. 343. Mart. MILL. Dict. v. 4. Jaff. 122. Lamarck Illust. t. 522. (Matoureae; Abl. Guian. 641. Jaff. 119.)—Clasis and order, Didymium Angiospermatis. Nat. Ord. Peronate, Linn. Striphularie, jufi.
VAN

entire; lower dilated, two-lobed. Stem. Filaments four; two from the disk of the lower lip, curved upwards; two from the throat, higher up; anthers ovate, connected in pairs. Pfl. German oblong; fyle thread-shaped, the length of the stamens; stigmata two, ovate, membranous, reflexed. Peric. Capsule oblong, of one cell. Seeds numerous.


1. V. diffusa. Round-leaved Vandelia. "Vahl Eclog. v. 2. 42."—Leaves roundish, nearly fife, smooth above.—Native of the West Indian islands of Montserrat and Santa Cruz. Stem herbaceous, square, crofs-branched. Leaves roundish-ovate, blufhing, crenate, or bluntifh serrated, opposite, on short flalks; smooth above; rather hairy beneath. Flowers axillary, opposite, foliary, on short flalks. The habit and size of the leaves refeemble Veronica serpyUifosa.

2. V. praenitis. Obof-leaved Vandelia. "Vahl Eclog. v. 2. 48."—Willd. n. 2. (Matonrea praenitis; Aubl. Guian. 642. t. 259. Tupéica, five Scoparia; Pfl. Bræf. 246.)—Leaves flakled, elliptic-oblong, acute, finely downy on both fides.—Native of moif ground in Cayenne; about the borders of meadows near the town, flowering almost all the year. It is known by the name of Wild Basil (Bagiae famangae), and esteemed a good vulnerary. The flams are fveral, ereét, two feet high, leavy, square, forked. Young branches, as well as the leaves, foft to the touch, clothed with fine short pubefcence. Flowers blueifh, axillary, mollly foliary. They are delineated in Aublet's figure as having the upper lip in two lobes, the lower in three, which does not agree with the Linnean generic defcription, copied above from the Manifila. Yet the other characters, and the habits of the plants, answer fo well, that we are perfuaded they muft, as Schreber fuscpeeta, belong to one genus. This opinion is confirmed by Vahl, who mentions this fpecies as of very frequent occurrence, by the road-fides in South America, from Trinidad to Brazil. The root is annual. The fame learned botanift had, no more than ourselves, any opportunity of examining the rare Vandelia diffusa alive, nor does it appear whence Linneus took his defcription; except poifibly from two or three very incomplete dried fpecimens, which are now scarcely fufficient to affift in forming an opinion on the subject.

VANDEPUT, CAPE, in Geography, a cape on the well coast of North America, and eait point of Prince Frederic's found. N. lat. 57° 5'. E. long. 22° 12'.

VANDER-CABEL, in Biography. See Cable.

VANDER-DOES. See Does.

VANDER-HELST. See Helft.

VANDER-HEYDEN. See Heyden.

VANDER-MEER. See Meer.

VANDER-MEULEN. See Meulen.

VANDER-NER. See Nee.

VANDERWERF, ADRIAN. This ingenious painter was born at Ambacht, near Rotterdam, in 1659, and received the principal part of his education under Eglon Vander Nee. At the age of 18, he left that matter, and becoming acquainted with M. Fluyt, who posifled an extenfive collection of drawings by Italian masters, to which he had constant aces, he, by this aid, and also by drawing after casts from antique figures, formed a style of design much more elevated and pure than that of his countryman and contemporaries.

At about the age of 37, his works attracted the notice of the elector palatine, on his vift into Holland; and he commissioned him to paint for him a picture of the Judgment of Solomon, and also his own portrait, to be prefented to the Florentine gallery of artists; and he invited him to bring the pictures to Duffeldorf. The following year he executed that object, and the elector was defirous of retaining him in his service; but to this Vanderwerf would not consent, but engaged to devote to him six months of the year, for which he received a liberal pension. In consequence, the gallery of Duffeldorf is the theatre of Vanderwerf's glory, and his pictures there are numerous; but they are not very uncommon in this country. The character of them is given by Sir Joshua Reynolds, who, in his critical tour into the Netherlands, says, "they (the pictures by Vanderwerf at Duffeldorf) are twenty-four in number in one room, three of them as large as life; a Magdalen, whole length, and two portraiture. His pictures, whether great or small, certainly afford but little pleasure; one of the principal causes appears to me, to be his having entertained an opinion that the light of his picture ought to be thrown solely on the figures, and little or none on the ground or sky. This gives great coldness to the effect, and is so contrary to nature, and the practice of those by whose works he was surrounded, that we cannot help wondering how he fell into the mistake. His naked figures appear to be of a substance much harder than flesh, though his outline is far from cutting, or the light not united with the shade, which are the most common causes of hardships; but it appears to me, that in the present instance, the hardships of manner proceeds from the fondness and union being too general; the light being every where equally lost in the ground, or its shadow, and thus producing the appearance of ivory or plainer, or some other hard substance." There is also a want of tranparency in his colouring, and he has constantly the defect of Rembrandt, that of making his light only a single spot. However, to do him justice, his figures and his heads are generally well drawn, and his drapery is excellent. He died in 1737, aged 68.

He had a brother, Peter Vanderwerf, who copied his pictures, and imitated his manner. Though he occasionally painted histroy, yet his pictures more frequently represent domestic scenes; which, though not equal to his brother's, are very highly wrought, and have sometimes been mistaken for his. Peter died in 1718, aged 53.

VANDEVELDE, ADRIAN. This excellent painter was born at Amsterdam in 1639. He discovered, whilst he was yet at school, a decided predisposition for painting, and covered the walls of his father's house with sketches of all kinds of animals, drawn with an intelligence very unusual at that early period of life, and which induced his father to place him under the tuition of J. Wynants, where he made a very extraordinary degree of progress. Wynants taught him the practice of drawing from nature, and studying in the open air. It was his constant custom to pas his days in the fields, designing every thing essential to his portraits; and in this mode, infinitely more variety may be obtained than the most inventive genius can supply without it. Besides this useful mode of study, he also applied himself to draw from the human figure, and obtained a considerable degree of excellence. In this respect he very fur surpassed his master, who afterwards constantly employed him; as he had previously done wooversmans and Lingelbaek, to decorate his landscapes with figures and animals; as also did Hackaer, Hoobma, Vander-Heyden, and others, thus giving an additional interef to their admirable performances.

The scenes which Adrian Van develde chose for the exercise of his art are in general very confined, and seldom above the ordinary appearance of common nature; but they
are rendered with so much purity of colour, and fulness and perfection of execution, that they captivate, notwithstanding their simplicity. His animals, which are generally the subjects of his pictures, are designed with correctness, and painted to perfect imitation; particularly his cows, sheep, and goats; perhaps not with so much spirit as those of Paul Potter, but more soft and delicate. His pictures, which are generally small, are universally held in the highest admiration, and are sold at very high prices. Unhappily he died in the very prime of his life, at the age of 33; and yet his pictures are by no means scarce, as his industry was inconceivable, and his facility very great.

Though landscape and animals were his more regular objects of study, yet he felt himself qualified to undertake an historical picture for the Catholic church at Amsterdam; and the ability with which he executed a Defcent from the Cross for the altar-piece there, still testifies the power with which he might have disdained himself in history, had he more regularly pursued it. He died in 1672. There are about twenty etchings by him of cattle and landscapes.

VANDEVELDE, William, the Elder, was born at Leyden in 1619, and early in life followed the occupation of a mariner. It is not known at what time he turned his thoughts to painting, or by whom he was instructed in the art; but before he was 20, he had acquired considerable reputation for painting marine subjects in black and white. His skill recommended him to the notice of the States General; and Descamps says, that he was furnished by them with accommodations in a small vessel, for the purpose of attending its fleet, and making sketches of their different manoeuvres and actions. He was prefect at various engagements at sea, and frequently exposed himself to danger in the prosecution of his studies. He is said to have been present at the action between the Duke of York and the Dutch admiral Opdam, in 1665; and at the memorable one the following year, between the English and Dutch fleets, commanded by the Duke of Albemarle and De Ruyter. King Charles II. invited him to England, where he came some time before 1675; as in that year the king settled a salary upon him of 100l. per annum. He continued in the same capacity under King James II., until his death in 1693. He was buried in St. James's church, where is a tomb-stone to his memory.

VANDEVELDE, William, the Younger, the son of the preceding artist, was born at Amsterdam in 1633. He was initiated in the art of painting by his father, but obtained more knowledge of colouring and effect by studying under De Vlieger, an eminent marine painter; and at length arrived at a degree of perfection in the treatment of those subjects, which still remains unrivalled. After he had practiced with great success for some time in Holland, and enriched many cabinets there with his works, his father prevailed upon him to come to England, where he was soon noticed by the king, and complimented with an engagement and a salary such as his father's, and had also apartments provided for him at Greenwich.

During the life of his father, as appears by an order of the privy seal, he was much employed in painting pictures from his sketches, but doubtless rendered more agreeable by his own better taste and feeling. The exercise of his talents, however, was not confined to the service of his majesty; he was constantly employed by various persons, and his pictures are, therefore, to be found in almost every collection which has any pretence to admiration. One of his grandest compositions for chiaro-scuro is in the gallery of the marquis of Stafford, where the magisterial forms of the clouds, the motion of the waves and of the vessels, and the truth and imposing quality of the tone of colour, contend for pre-eminence.

The compositions of the younger Van de Velde are distinguished by a more tasteful arrangement of forms and objects, than is to be found in those of any other marine painter. His vessels are correctly drawn, and the falls, the cordage, and rigging, finished with a delicacy perfectly astonishing, and with unexampled freedom. No one ever surpassed the purity and truth of his tints: whether he represents the serenity of the calm, or the majestic obscurity of the storm, an undeviating correctness and fulness adorn his canvas, and render his works precious in the eyes of all beholders. He died in 1697, at the age of 74.

VAN-DIEMEN'S LAND, in Geography. See Diemen's Land.

VAN-DIEMEN'S ROAD, an anchoring place in the Southern Pacific ocean, on the coast of Tongatapu, one of the Friendly Islands. S. lat. 21° 4'. E. long. 185° 4'.

VAN-DIEST, in Biography. See Diest.

VANDORF, in Geography, a town of Germany, in the county of Henneberg, on the Werra; 6 miles E.S.E. of Meinungen.

VANDOSIA, in Ichthyology, a name by which some authors have called the Leiistes, the common dace.

VANDSHELLING ISLANDS, in Geography, a cluster of small islands in a bay of the Pacific ocean, on the north coast of New Guinea. S. lat. 3° 32'. E. long. 156° 15'.

VANDSIA, a town of Norway, in the province of Christiania; 43 miles W. of Christiania.

VANDUARA, in Ancient Geography, a town of Britain, belonging to the Danes; which being confederably to the north-west of Colonia, was most probably at or near Pailley.under the care of Henry Van-Balen, a painter of considerable reputation. He had made a rapid progress under that master, when the increasing fame of Rubens, and the beauty of his works, inspired him with a desire of becoming a disciple of so able an instructor; and his wishes were soon crowned with success. Rubens soon beheld with pleasure the value of the talents brought by Vandyck into his school, and found in him an able and useful assistant in forwarding his larger works from the sketches he himself had prepared; and it was not long ere an incident established Vandyck's superiority above his fellow pupils, and rendered him at once an object of interest and of envy. Whilst Rubens was employed upon his renowned picture of the Defcent from the Cross, his pupils were anxious to see it in its progress, and procured admission to his studio during their master's absence. One of them, in the wantonness of youth, pulled Diepenbeek, and he fell against the picture, and effaced an essental part of it, on the face of the Virgin, and the arm of the Mary Magdalen, which Rubens had just been painting. Conferration and alarm seized every one present; and to prevent, if possible, the discovery of the accident, John Van-Hoeck proposed that Vandyck should endeavour to restore the picture to the state in which they found it. He did so; and the next morning, when Rubens came into his room, on regarding the picture, he is said to have remarked, "there is a head and an arm which are by no means the worst of what I did yesterday;" and though

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afterwards he might have discovered the mischief, he did not change the painting.

It has been ascertained by D'Argenville and others, that this circumstance, and the growing ability of Vandyck, alarmed the jealousy of Rubens, and that, in consequence of it, he advised his pupil to renounce historical painting, and adhere to portraiture. But this calumny must be regarded as refuted, by the mere consideration of Rubens having advised Vandyck to go to Italy, where he himself had reaped so much benefit, and where history would be the more sure to rivet the attention of a student. Had he, however, advised him to adhere to portrait painting, it is but a farther proof of his clear perception of the native turn of mind of Vandyck, and a liberal hint how to employ his talents to most advantage, not originating in the mean passion to which it has been ascribed, but in judgment and good-will. That they did not separate upon unfriendly terms is evident, by Vandyck acting upon his advice, as to going to Italy; and presenting his matter, previous to his departure, with two historical pictures, and a portrait of his second wife Helen Forman; and receiving from Rubens in return a present of one of his finest horses.

In 1619, when he was 20 years old, Vandyck left his native city for a residence in Italy, and first visited that emporium of colour, Venice, where he copied and studied with great attention, and imbibed the real spirit, of the works of Titian. At Pétworth, the seat of the earl of Egremont, are two portraits of sir James and lady Shirley, (who was a Persian lady,) in Persian costume, which exhibit, in the freedom and fulness of colour with which they are painted, the perfect understanding he had of the style of that great Venetian master. From Venice he went to Genoa, where his power was recognized, and his pencil employed, by the principal nobility in their portraits, as well as by several churches and convents, for which he painted historical pictures; and nothing is more astonishing in the history of the art, than the rapidity and facility with which so great a number of works was produced by this extraordinary artist. He is reported to have hung up in his studio, on his return from Italy, forty copies made by himself from pictures by Titian, though he was much engaged in original works during his residence there. After some stay at Genoa, he went to Rome, and was there introduced to that patron of elegant literature, the cardinal Bentivoglio, who had been nuncio from the pope in Flanders, and to whom, of course, his talents must have been already known. From this celebrated character he painted that prince of portraits, which for several years was an ornament of the gallery of the Louvre, but now is returned to its original situation, the museum at Florence. Nothing in painting has ever surpassed the life and vigour of the head in this surprising and agreeable picture. He painted some historical subjects for the cardinal, and also several portraits of distinguished persons; but not uniting with his countrymen, then at Rome, in the Bentogel society, they rendered his residence there unpleasant to him, and he returned to Genoa, where he was cared for and honoured, and met with constant employment. Whilst there, he was invited to Palermo, to paint the portrait of Philibert, prince of Savoy, the viceroy of Sicily, and was engaged in several commissions for the court; but the plague breaking out, obliged him to leave that place, and he soon after returned to Flanders.

The reputation of his growing talents had led his countrymen to an anxious desire of witnessing his power, and several religious communities advanced to employ his pencil. His first public work was his celebrated picture painted for the church of the Augustines at Antwerp. For a time it adorned the walls of the Louvre, but is now restored to the church whence it was taken. The subject is St. Agustine e Ecolap, supported by angels, with other saints; of which there is a print by De Jode. Of this performance, which procured him great reputation, Rubens was one of the most zealous admirers; but sir Joshua Reynolds observes, "that in some measure it disappointed his expectation: that it has no effect from the want of a large mass of light." In justness to both painter and critic, it must be observed, that as it was originally painted by Vandyck, St. Augustine was dressed in white, and with the two angels that support him, formed a principal mass of light; but that the monks infatuated upon their patron being dressed in black, and would not pay for the picture till it was so done.

Commisions now came hafly upon him, and most of the principal public edifices of Antwerp, Brufels, Ghent, and Mechlin, were embellished with the productions of his pencil. About this time he painted that beautiful series of portraits of the eminent artists of his time, which, for character, variety, and exquisite execution, remain unequalled. Several of them he etched himself, and the rest have been engraved by the best engravers of that day. One of his most excellent historical productions was painted for the church of the Recollects at Mechlin, which also paid a visit to the Louvre, but was returned with the rest of the spoil from Flanders. Its subject is the Crucifixion, and sir Joshua says of it, that, "upon the whole, it may be considered as the finest of Vandyck's works, and establishes his name to the title of an historical painter."

The taste and ability thus displayed by this great artist did not injure him from ill treatment by his contemporaries, by whom he was accused of tameness and insipidity; and in addition to this, he endured a great mortification from the canons of the collegiate church at Courtray, for whom he painted the Elevation of the Cross, belowing upon it all the power of his art. The picture being completed, it was sent to the place of its destination, when, instead of receiving the due meed of praise for its extraordinary merit, it was pronounced by the chapter to be a detestable performance, and they treated the author of it as a miserable artist; and with difficulty he could procure payment for his picture. It was not till the picture had been seen and commended by several artists and connoisseurs, that they became sensible of their error; and then, to secure it, violent and insensible conduct, they resolved to commission him to paint two more pictures for their church; but Vandyck, with becoming indignation, refused to waste his talents upon men so unworthy of regard, and so little capable to judge of works of art.

Soon after this, he accepted an invitation from Frederic, prince of Orange, to visit the Hague; and there he painted the portrait of that prince, and those of his family, with many of the principal personages of the court.

The patronage which it was understood was to be found at the Engtish court, where Charles I. then reigned, induced Vandyck to visit England in 1629, when he lodged with his friend Geldorp, the painter; but had not the good fortune to attract the notice of his majesty. Disappointed, he returned to Antwerp, with intent to pass the remainder of his life there, when a portrait of sir Kenelm Digby, which he had painted, was shewn to Charles, and he immediately gave orders for an invitation being sent to the painter to return; and accordingly in 1631 he did so, and was most graciously received by the king.

On this second arrival, he was lodged at Blackfriars, at the king's expense; and his majesty was much delighted with his performances, that he often went by water to visit
visit him, and see him paint; frequently sitting to him for his portrait, having others of his wife and children; and on the 5th July, 1632, conferred upon him the honour of knighthood, and soon afterwards granted him an annuity of 200l. a-year for his life.

Popularity and occupation now flowed in full tide upon him, and the rapidity of even his pencil could scarcely keep pace with the commissions he received, for portraits especially. There are few hours of the old nobility of the country wherein are not to be found some pictures by Vandyck. In the king's palaces, the portraits of Charles and his queen and family are numerous. One of a very fine quality adorns the Louvre. At Lord Digby's in Warwickshire, is a great number of his portraits. At Petworth, besides the two pictures mentioned above, painted at Venice, are eleven portraits by him, all of the Percy family, or their immediate friends. At Warwick Castle is the like number; and in each apart works of the first-rate quality. At Wilton, the grandest of his pictures painted here adorns a magnificent apartment: it is of William, earl of Pembroke, and his family. The style in which it is executed is large and grand, and of a much higher quality than his later productions exhibit, which, in comparison, have only delicacy to compete with the boldness and breadth of this. There are here also many others of his hand; but it would be an almost endless and needless talk to enumerate the pictures which he painted during the sixteen years he resided here, the greater part of which comprehended those of a large size. The prices he was paid confined them to the higher classes, and for them only he wrought. For a half length he had 40l., and for a whole length 60l. This, at that time, was a large sum, and the facility of his execution, together with his pension, enabled him to indulge a natural taste for splendour and luxury. He kept a splendid table, and often detained those who sat to him to dinner, both for society, and the opportunity of studying their countenances, and for touching their pictures after dinner. He was, however, indiffusible, as appears from the number of his works, which, though he died so young, are scarcely surpassed in number by those of Rubens. His practice was peculiar. Sir Peter Lely told Mrs. Beale, that Laniere the painter advised him, that he had sat seven entire days, morning and evening, to Vandyck, for his portrait; and that he would not let him look at the picture, till he was himself satisfied with it. He was addicted to pleasure, was fond of music, and treated musicians with liberality; was a generous patron of all ingenious men, and painted the portraits of many gratuitously. But he paid dear for his indulgence; his luxurious and sedentary life brought on the gout, and hurt his fortune; and he unwisely could not, like his master, resist the temptation of the time, the pursuit of the philosopher's stone; in which perhaps, as Mr. Walpole says, he might have been encouraged by his friend for Kenelm Digby. Towards the close of his life, the king bestowed on him the daughter of the unfortunate Lord Gowry (Maria Ruthven) for a wife; with whom he acquired only honour and beauty, and by whom he left one daughter, afterwards married to Mr. Stepney, who was an officer of the horse-guards on the re-establishment of the royal family.

Soon after his marriage he revisited his native city, and from thence went to Paris, hoping to be employed in the decoration of the gallery of the Louvre; but was disappointed, in finding the commission given to Poullin, who had been brought from Rome expressly for this purpose. Vandyck then returned to England, and still emulous of his great master's renown, was ambitious of being employed upon some great national work; and proposed to the king; by Sir K. Digby, to paint the walls of the banqueting-house (of which the ceiling had already been adorned by Rubens) with the history and procession of the order of the Garter, for which he asked 8000l; a proposal far more agreeable to the taste than to the purse of the king; and if it had been accepted, two events which soon after occurred, would have totally prevented its completion, viz. the double triumph of death over the patron and the artist. The former indeed lived some years after the decease of the latter; but his political demise followed shortly upon that event, which occurred on the 9th December 1641, when he had only attained the age of 42.

Though Vandyck produced many valuable works, as we have seen, in historical painting, yet it by no means appears to have been his forte; as he seldom exhibited much expression, but a tame sweetness of effect reigns in them. It is doubtful in portraiture that he stands most decidedly conspicuous, and he may be placed at least alongside of Titian: for if the palm of superiority be given to the latter for his heads, the former must have equal praise for every other part of his pictures, and particularly for the ordnance of the whole. His better compositions are conspicuous for their unity and propriety; but his great quality is his perfect understanding of the nature of all the parts, the head, the hands, drapery, fizzes, &c. and the delightful union of taste and beauty of execution, which he never failed to give. In identity of character he was not often conspicuous; perhaps the cardinal Bentivoglio is the most perfect exemplar; but Sir Joshua Reynolds has superadded that invaluable quality to all that he might have acquired from the works of Vandyck or of Titian.

VANDYCK, PHILIP, known by the name of the little Vandyck, was born at Amsterdam in 1609, of a different family to that of Sir Anthony, and was a disciple of Boonen, under whose tuition he remained till he had become almost capable of teaching his instructor. He painted small portraits, and from them obtained his cognomen; but was more successfully employed in painting conversation pieces, ladies at their toilette, gay assemblies, &c. which he composed and painted ingeniously. He died at the Hague in 1752.

VANDYKE'S ISLANDS, in Geography, two islands, Great and Little, in the West Indies, situated to the northwest of Tortola.

VANE, Sir Henry, in Biography, a person of peculiar talents and disposition, who exhibited a conspicuous character during the period of the English Commonwealth, was the eldest son of Sir Henry Vane, of Hadlow in Kent, and Raby castle in Durham, secretary and treasurer of the household to Charles I. He was born about the year 1612, educated at Westminster school, and at the age of sixteen admitted as a gentleman-commoner at Magdalen college, Oxford. Here he remained for some time without matriculation, of which he disapproved; and having visited France and Geneva, he returned with an avowed disaffection to the liturgy and government of the English church, which no efforts of bishop Laud were sufficient to overcome, although he was employed by the king for this purpose. In the year 1634 he joined a number of persons, who being made uneasy by the measures that were pursued at home, emigrated to New England; and being favourably received in that colony on account of his rank and talents, he was soon appointed governor of the province of Massachusetts. Here he incurred odium by his patronage of Antinomianism; and having taken an active part in delimiting those sentiments with regard to religion that occasioned contentions very injurious to the colony, he was excluded from his high office, and
and in consequence of this degradation, he returned privately to England in the year 1639.

Experience having taught him wisdom, and having produced a change in his principles and temper, he married a lady of good family, and occupied the place of joint-treasurer of the navy with Sir William Ruffell. Devoting himself to bufiness, he was chosen representative for Hull in the parliament of April 1640, and the subsequent Long parliament. He was also so much in favour with the royal party, that he was knighted by the king. His public conduct seems at this time to have justified the character given of him by Lord Clarendon, who says, "he was a man of extraordinary parts, a pleasant wit, a great understanding, which pierced into and discerned the purposes of other men with wonderful sagacity, which had himself vulturum clausum, that no man could make a guess of what he intended. He was of a temper not to be moved, and of rare diffimulation, and could comply when it was not reasonable to contradict, without losing ground by the conceitupon a crisis, however, was approaching, which required his taking a decided part; and accordingly he enlisted with those who were adverse to the court. On occasion of the trial of lord Strafford, he produced from his father's papers evidence against him, which served in no small degree to produce his condemnation. He also carried up to the lords, the articles of archbishop Laud's imprisonment. In 1643, he was nominated one of the Assembly of Divines for the settling of church government; and he was appointed in the same year one of the parliamentary commissioners for negotiating a treaty with the Scots. His persuasion induced the signature at Edinburgh of the Solemn League and Covenant; and in accomplishing this object, he overreached the Presbyterians of that country by an article which established the existing form of religion in Scotland, but left ambiguous the nature of the reform in the two other countries. About this time he became sole treasurer of the navy, but without any view to his own emolument: for he gave up his own patent for life from the king, and for an agent whom he substituted in his own place, he obtained a salary of 2000l. per annum, the residue being brought to the public account. Of his religious principles and character at this time, lord Clarendon speaks in the following terms: "Vane was a man not to be described by any character of religion, in which he had swallowed some of the fancies and extravagancies of every sect or faction; and was become (which cannot be expressed by any other language than was peculiar to that time) a man above ordinaries, unlimited or unrestrained by any rules or bounds prescribed to other men, by reason of his perfection. He was a perfect enthusiast, and without doubt did believe himself inspired, which so far corrupted his reason and understanding, that he did at some time believe he was the persecutor destined to reign over the saints upon earth for 1000 years." In connection with the party denominated Independents he opposed terms of peace, when he acted as one of the parliament's commissioners at the treaty of Uxbridge in 1645, and when he negotiated in the Isle of Wight in 1648. Although he had from artifice or feeling no concern in the king's death, he was one of the council of state invested with regal power after that event. He was a steady adherent to the republican government, under which he occupied an important station; and in 1641 he was one of the commissioners sent into Scotland for introducing the English government there, and for effecting an union between the two countries. On this occasion he is represented by Burnet as having fomented the division prevailing between two parties in the kirk, and as having discouraged all attempts to unite them, with a view of maintaining over them more easily temporal authority, whilst they disagreed among themselves. To Cromwell, in all his attempts to assume the supreme power, he was a determined adversary; and on account of his efforts for this purpose, he was summoned before the council by Cromwell in 1656, and ordered to give security that he would not disturb the nation, and for his refusal was for a short time imprisoned at Carisbrook castle; and though attempts were made to intimidate him by disputing his title to the Ruby estate, he remained inflexible during the period of the usurpation. In Richard's parliament of 1659, he was a representative of the borough of Whitechurch in Hampshire, and was active in his endeavours for restoring the republican government, and his spirited speech for this purpose, on record, is said to have had no small effect in subverting the new phantom of single authority. After the revival of the Long parliament, he was nominated one of the committee of safety, and proposed a new model of government, of which it was a fundamental principle, that in the delegation of the supreme power from the people to their trustees, there were some points which could not be ascertained by the latter; and of these he specified the admission of any king or single person to the legislative or executive power, and the exercise of compulsion in matters of faith and worship. Baxter affirms, that Vane's model was that of a "fanatic democracy;" and his notions have been as much reproached by Presbyterian writers as by Episcopallians. Vane maintained his adherence to the republican cause, and prosecuted his efforts for supporting it, till the contest was terminated by the Restoration. His conduct on this occasion, though he was not one of the regicides, caused his name to be inferred in the bill of those who were excluded from the act of indemnity. Apprehending no personal danger, he continued in his house at Hampstead, till he was taken into custody and committed to the Tower, as a person whom it was hazardous to permit to be at large. A petition, however, was presented to the king by the Convention parliament in favour of him and Lambert, that they should be pardoned as to their lives, to which was returned a gracious answer. Nevertheless in July 1661, in the succeeding parliament, an order was signified by the house of commons, that both Vane and Lambert should be proceeded against according to law. Upon this order Vane was brought from his prison in the Isle of Scilly, and committed to the Tower for trial. For his conduct after the death of Charles I., comprehending his active efforts in opposition to the present king, as a member of the council of state and a pension in office, he was indicted of high-treason. In June 1662 he was put to the bar, and is said to have defended himself with ability and resolution, or, as his enemies say, with arrogance and insolence. Among other pleas, he urged that treason could only be committed against a king de facto, and not de jure, which was the situation of Charles II. till the Restoration; and that he had in all changes adhered to the commons, as the fountain of all regal authority: a principle for which he had exposed himself to the tyranny of Cromwell, and for which he was now ready to undergo all the rigour of perverted law and justice. Nevertheless he was found guilty, and sentenced to suffer the whole penalty adjudged to high-treason, which, however, was commuted for beheading. It has been not unreasonably forgettled, that though the king could not easily be defended for breach of his promise to the former parliament on this occasion, his death was a retaliation for the part he had acted on the impeachment of lord Strafford. On the 14th of June he was brought to the scaffold on Tower-hill, and though con-
ndered as a person possessing little natural courage, he behaved with wonderful composure and firmness. In his address to the spectators, whilst he justified himself on certain points that were confined to reflect upon the government and judges, he was rudely interrupted by the lieutenant of the Tower, who repeatedly ordered the trumpets to sound that his voice might not be heard. He died about the 50th year of his age, and left one son. His writings, chiefly on religious topics, were confounded and obscure. Bishop Burnet says of him, "that though he fat up a form of religion of his own, yet it confuted rather in a withdrawing from all other forms, than in any new or particular opinions or forms, from which he and his party were called 'Seekers,' and seemed to wait for some new and clearer manifestations. In these meetings he preached and prayed often himself, but with so peculiar a darknesse, that though I have sometimes taken pains to see if I could find out a meaning in his words, yet I could never reach it. His friends told me he learned to Origen's notion of an universal sanitation of all, both of devils and the damned, and to the doctrine of pre-existence."

As to his political conduct, it is observed by one of his biographers, that "though he employed craft and dissimulation as his means, there seems no reason to doubt of his sincerity as to his ends, which appear to have been those of a visionary, but not of a selfish statesman. His enemies fearfully charge him with mercenary views, and his friends represent him as a real, though mistaken, lover of his country." Clarendon. Ludl. Mem. Biog. Brit. Hume. Gen. Biog.

Vane, in a Ship, is a thin slip of hunting hung to the main-head, or some other conspicuous place, to shew the direction of the wind. It is commonly fewed upon a wooden frame, called the flock, which contains two holes, by which to slip over the spindle, upon which it turns about as the wind changes.

Vane, Dog, in Sea Language, is a small light vane, formed of a piece of packthread of about two feet in length, upon which are fixed five or six thin slices of cork stuck full of light feathers. It is usually fastened to the top of a staff, two yards high, which is placed on the top of the ship's side, on the quarter-deck, in order to shew the direction of the wind to the helmsman, particularly in a dark night, or when the wind is extremely feeble. Falconer.

Vanes, on Mathematical Instruments, are sights made to move and slide upon cross-flaws, fore-flaws, quadrants, &c.

Vanes, or Vanes, of Feathers. See Feather.

Vanes, Weather. See Weather.

Vanes of Windmills. See Windmill.

Vaneëring. See Vaneëring.

VAN-ELLIOE, in Botany. See VANILLA.

VANELLUS, in Ornithology, a name given by many to the lapwing, more commonly known by the name capella.

VANELITTI, Clementino, in Biography, knight of the holy Roman empire, and lord of Villanova, was born at Roveredo in 1755; and being educated under the care of his uncle, after the death of his father, he became, by incessantly reading Plautus and Terence, so good a Latin scholar, that, in his 16th year, he wrote a Latin comedy, entitled "Lampadaria;" and, in the following year, recited an inaugural oration in the Academy degli Agiati at Roveredo, in the true language of Plautus. Before the age of 22, he was elected secretary of this Academy, and he had improved his talent by a familiar acquaintance with the works of Cicero. In 1776 he defended Tarabofchi against the attack of the Spaniard Serrano, for his censure of some passages in the epigrams of Martial; and the letter he published on this occasion, considered as the production of a young man 23 years of age, was much admired. Upon the death of his intimate friend, the abbé Zorzi of Venice in 1779, he paid an honourable tribute of respect to his memory by publishing his life, and a collection of letters that had passed between them, and also an examination of a question suggested by d'Alembert, whether any one at present should venture to write Latin, which he decided in the affirmative, but Vanetti's most humorous writing, in the Latin language, was a bitter satire on Cagliostrò, who deluded the people at Roveredo, in 1758, by his pretended prophecies and miracles. Vanetti, in order to expose this juggler, wrote a small work in the manner of the book of Chronicles, and in the Latin style of the Vulgate, entitled "Liber Memorialis de Cagliostrò." Encouraged by Betinelli and others, he became a classical writer in his native language, beginning with a well-written letter of the younger Pliny. But his chief fame was derived from his "Observations on the Poems of Horace, with Limitations of that Poet," which, with respect to matter and language, are said to exceed any thing of the kind in Italian. He also published fourteen dialogues in the manner of Lucian; and having tried his talents in various kinds of poetry, his "Sermons" in the true Horatian spirit are pre-eminent, and hence he obtained the name of the Italian Horace. Besides the reputation which he acquired as a poet, he also excelled in crayon painting. To the noise and bustle of the world he preferred the tranquillity of domestic life on his estate, which he compared to the Sabine farm of Horace, and never travelled farther from home than Verona, Mantua,
and Auch, and died at Toulouse in 1735. His other works were a volume of "Opuscula," containing essays on moral topics, epistles, odes, epigrams, &c.; a "Dictionary of Poetry," in Latin, quarto, a work in high estimation, and abridged for the use of students; and a "Dictionary, Latin and French," which he began, but did not live to finish. For his encouragement in his studies, the king allowed him a pension. Moreira. Nouv. Dict. Hist. Gen. Biog.

VANERIA, in Botany, received its name from Loureiro, in memory of father James Vaniere, a French Jefuit, who was born in 1664, and died in 1739; he celebrated a poem on rural life, in which various plant species are beautifully described. —Loureiro. Cochinch. 564.—Clafs and order, Mo- nocia Pentandria. Nat. Ord. Urtice. Juff. Gen. Ch. Male, Cal. Peruian in four deep, ovate, fleshy, erect, converging segments. Cor. none. Stam. Filaments fearedly any; anthers five, inserted in the calyx below its middle, of two kidney-shaped, compressed, pellucid lobes. 

Female, on the same common receptacle, Cal. as in the male. Cor. none. Pist. German superior, rounded, dimph, fimple; style capillary, very slender, the length of the calyx; stigma simple. Peric. none, except the permanent juicy calyx. Seed solitary, lenticular, smooth, tipped with the permanent style. Common Receptacle ovate, bearing from ten to twenty flowers, crowding each other into an angular shape, and mostly confluent, forming a roundish, compound, fleshy berry, tubercular externally, with small intermediate spacers.


Female, on the same receptacle. Calyx like the male. Style one. Seed one, enveloped in the pulpy calyx.

1. V. cochinchinensis. Cay lang 10 of the Cochinchine. —Stems prickly. Leaves alternate. —Native of thickets in Cochinchina, in which country it serves for the smaller kinds of fences. Stems shrubby, erect, numerous, branched, round, smooth, three feet high, beft with many long straight prickles. Leaves ovato-lanceolate, entire, smooth. Fruit roundish, about eight lines in diameter, very red, sweet, eatable, on fimple axillary twin flalks.

2. V. chinensis. Hoang bang Xiong of the Chinese. —Stems without prickles. Leaves tufted. —Native of bushy places about Canton. A shrub fifteen inches high, erect, branched. Leaves lanceolate, entire, smooth, collected into tufts. Flower a round head, on a long, simple, solitary, erect, axillary flalk. Common Receptacle flaky. Loureiro never met with any female flowers, and therefore conceived that this species might be dioecious. We have no acquaintance with any thing answerable to the above descriptions. The genus seems very near Morus.

VANIESA, or Devil's Key, in Geography, a small island in the Spanish Main, near the Mosquito shore. N. lat. 14° 5'. W. long. 82° 35'.

VANILLA, in Botany, a name of Spanish origin, or at least very common among the Spaniards in South America, adopted by Plumier as generic. Though barbarous, it may for its sound be tolerated; and we have little doubt that the writers of the Augultan age would have adopted such, had they, like Cazan, met with them in describing any new country. However this may be, we merely yield unwillingly to the example of writers of the first botanical authority, who have now establifhcd this name, and we should greatly have preferred Mr. Salisbury's appellation of Myro- broma.—Plum. Gen. 25. t. 28. Juff. 66. Swartz Ind. Occ. 1515. Act. Nov. Upfal. v. 66. t. 5. f. 1. Schrad. Journ. v. 2. 208. t. 1. f. 1. Schrad. Neues Journ. v. 1. 82.


Gen. Ch. Cal: Peruian superior, of three nearly direct, lanceolate, equal, coloured leaves, deciduous. Cor. petals two, lanceolate, of the size and colour of the calyx. Nectary a lip, proceeding from the lower part of the style, convoluted at the base, dilated at the margin, without a spur, falling off with the petals. Stam. Anther a hemispherical, moveable, terminal, deciduous lid, of two cells, attached by its posterior edge to the top of the style; masses of pollen globular, granulated. Pist. German inferior, elongated, nearly cylindrical; style erect, fuscicylindrical; stigma convex, towards the top of the style, in front. Peric. Capsule elongated, slightly triangular, fleshy, of one cell. Seeds very numerous, lenticular, delirious of a tunic, imbedded in pulp.


1. V. aromatica. Aromatic Vanilla, Vanillia, or Vanello. Willd. n. 1. Ait. n. 1. (V. flore viridi et albo, fruehtu uigiricatan; Plum. 1c. 183. t. 188. V. maxima; Merian Surn. t. 25. Epidendrum Vanilla; Linn. Sp. Pl. 1347.)—Leaves ovato-oblong, ribbed. Calyx and petals undulated. Lip acute. Capsule nearly cylindrical, very long.-Native of South America. Stem parasitical, climbing by means of simple, fleshy, fibrous, solidary radicles from each joint. Leaves a fapan long, fucculent, as thick as those of houseleek. Flowers large, variegated with green and white. Fruit eight or ten inches long, acquiring, after it is gathered, a peculiar and delicious fragrance, like the flowers of Orchis nigra, and some otheres of that family; on which account the Vanilla is used to perfume chocolate, and becomes a valuable article of commerce.

2. V. angulifolia. Narrow-leaved Japan Vanilla. Willd. n. 2. (Epidendrum Vanilla β; Linn. Sp. Pl. 1348. Angurek Warna; Kæmpf. Amoen. 867. t. 869. f. 2.)—Leaves linear-lanceolate. Calyx and petals flat. Lip acute.—Native of Japan. By Kæmpfer's account this is a parasitical climber like the last, and agrees with that in the colours of its flower, except being dotted with purple. Nothing is said concerning the fruit.

3. V. claviculara. Tendril-bearing Vanilla. Swartz Ind. Occ. 1515. Willd. n. 3. (Cereio affinis fcandens planta aphylla, &c.; &c. Sloane Jam. v. 2. 160. t. 224. f. 3, 4.)—Leaves lanceolate, acute, concave, rigid, recurved. Calyx and petals flat. Capsule somewhat triangular.—Native of woods, on a very dry calcareous foil, in the mountainous inland parts of Jamaica, Hifpaniola, &c. flowering in July. It is vulgarly called Green-with, and the negroes use a decoction of the whole plant for syphilitic complaints. The flem climbs to the height of twenty or thirty feet, and is swelled, as if jointed, at the infertion of each leaf, and tendril-like radicle. Leaves fleshy, an inch long. Flowers large, white, in axillary clusters. Fruit long and large, fleshy, with black thining seeds. Swartz. The figure of the flower in Swartz's plate belongs to this species.

4. V. planifolia. Fragrant Vanilla. Ait. n. 2. Andr. Repof. t. 538. (Myrobraena fragrans; Salib. Parad. t. 82.)—Leaves oblong-lanceolate, flat, slightly afirated. Calyx and petals even. Lip fringed, abrupt.—Native of the West Indies, said to have been introduced into our flowers by the present duke of Marlborough. In size this rivals the fift species, but the leaves are not so thick; the calyx and petals are not undulated, nor the lip pointed. We have no account
The flowers are said to be very fragrant, especially at night. Mr. Salisbury is erroneously charged, in Andrew's work, with having confounded this and the V. aromatica.

The species of this genus are far from being all known or understood.

The plant which produces the fruit called vanilla or banilla by the Spaniards, or the epidendrum vanilla of Linnaeus, has a trailing stem, somewhat like the common ivy, but not so woody, which fastens itself to any tree that grows near it by small fibres or roots produced at every joint; these attach themselves to the bark of the tree; and by them the plants are often nourished, when they are cut or broken off, from the root, at a considerable height from the ground, as is the case with the ivy in England. The leaves are as large as those of the common laurel, and are produced alternately at every joint. It rises to the height of eighteen or twenty feet, and the flowers are of a greenish-yellow mixed with white, which, when fallen, are succeeded by the fruit, which is eight or ten inches long.

The spots which are manufactured, grow not only in the bay of Campeachy, but also at Carthagena, at the Caracas, Honduras, Darien, and Cayan, at all which places the fruit is gathered and preserved; but it is rarely found in any of the English settlements, though it might be easily propagated in them: for the seed is so full of juice, that they will continue fresh, out of the ground, for several months.

When these plants are intended for propagation in the warm parts of America, nothing more is required than to make cuttings of three or four joints in length, which should be planted close to the stems of trees in low marshy places, and the ground about them kept clear of weeds.

The method used to preserve the fruit is, when it turns of a yellow colour, and begins to open, to gather it, and lay it in small heaps to ferment two or three days, in the same manner as is practised for the cocoa pods; then they spread them in the sun to dry, and when they are about half dried, they flat them with their hands, and afterwards rub them over with the oil of palma Christi, or of the cocoa; then they expel them to the sun again to dry, and afterwards rub them over with oil a second time: then they put them in small bundles, covering them with the leaves of the Indian reed to preserve them. These plants produce but one crop of fruit in a year, which is commonly ripe in May, fit for gathering, for they do not let them remain on the plants to be perfectly mature. When they are about half changed yellow, they effuse them better for keeping than when thoroughly ripe; at which time the fruit splits. While the fruit is green it affords no remarkable scent, but as it ripens it diffuses a mild grateful aromatic smell; but when it begins to open, the birds attack them, and devour the seeds greedily.

The fruit which is brought to Europe is of a dark-brown colour; wrinkled on the outside, and full of a vast number of black seeds, like grains of sand, of a pleasant smell, like balsam of Peru.

This fruit is only used in England as an ingredient in chocolate, to which it gives an agreeable flavour to some palates, though it is disagreeable to others; but the Spanish physicians use it in medicine, and esteem it grateful to the stomach and brain, good for expelling wind, for provoking urine, redressing sores, and curing the bite of venomous animals. Miller's Gard. Dict.

The vanilla, or vanillies, have an unctuous aromatic taste, and a fragrant smell, like that of some of the finer balsams heightened with musk. They are used chiefly in perfumes; scarcely ever among us in any medical intention; though they should seem to deserve a place among the principal medicines of the nervous clafs. By distillation, they impregnate water strongly with their fragrance, but give over little or nothing with pure spirit. By digestion, spirit totally extracts their smell and taste; and in great measure covers or suppresses the smell.

VANINI, LUCILIO, in Biography, a reputed atheist, was born about the year 1583, at Taurofano, in the district of Otranto, and kingdom of Naples. He studied philosophy and theology at Rome, where he changed his baptismal name for "Julio Cefare," and completed his education at Naples and Padua, comprehending medicine, law, and astronomy. Possessing himself unfortunately of the works of Cardan and Pomponazzi, he imbibed their errors; which, with the philosophy of Aristotle and Averrhoës, and the delusions of astrology, contributed to complete what may be called the confusion of his mind. Having entered into orders, and began to preach, his discourses were a medley of singular notions, which neither his nor any one else could understand. With a view of propagating his opinions, he travelled into Germany, the Netherlands, France, and England, in which latter country he was for a short time imprisoned, on account of his theological disputations. At Geneva, where he set up a school of philosophy, he was suspected of unfruitful and dubious faith, and therefore removed to France, passing some years at Lyons and at Paris. At this time, he was so far from being willing to acknowledge his defection of the Catholic faith, that he proposed to the apostolic nuncio at Paris to write an apology for the council of Trent. In 1615 he published at Lyon his "Amphitheatrum aeternae Providentiae, Divino-magicum; Christiano-physicum; Astrologico-catholicae, aduersus verecundos, Atheos, Epicuros, Peripatateticos et Stoicos," which was not suspected of atheism, and which indeed contains every thing incompatible with atheistical principles. In the following year he published at Paris another work, entitled "De admirandis Naturae Regimine Deaeque Mortalium Arcanis," which was printed with a privilege; but on a closer examination of its tendency, it was publicly burnt by a decree of the Sorbonne. As the author of this work ascribes to his goddes, Nature attributes which belong only to the Supreme Being, he is chargeable with the fame kind of atheism, that was maintained by some ancient sects of philosophers. He was likewise accused of stating arguments against religion, to which his replies were so unsatisfactory, as to furnish ground for suspicion that he designed to favour the cause of infidelity. Being under a necessity of quitting Paris, he withdrew in 1617 to Toulouf, where he taught medicine, philosophy, and theology; but there it was discovered, that he availed himself of his opportunities for general instruction to diffuse his impious and atheistical opinions; he was tried, and being found guilty, was condemned to have his tongue cut out, and then to be burnt alive. It is said, that on his examination, when he was asked if he believed in God, he took up a straw, and replied, "this is sufficient to convince me of the existence of a Creator," and that he afterwards made a long discourse on Providence. However, after his condemnation, he is said to have thrown off the mask; and to have uttered horrid impieties. He suffered death in 1619, (in 1629, according to Moheim,) at the age of 34, and on his memory has been entailed every kind of reproach which could have been suggested by a detestation of his doctrines. But Moheim says, "that several learned and respectable writers consider this unhappy man rather as a victim to bigotry and envy, than as a martyr to impiety and atheism; and maintain that neither his life nor
his writings were so absurd or blasphemous as to entitle him to the character of a deceiver of God and religion." An Apology for Vanini was published in Holland in 1712, by Peter Frederick Arp, a learned lawyer. Moreni, Mosheim, vol. v. VANISHING FRACTIONS, are fractions in which, by giving a certain value to the variable quantity or quantities entering into them, both numerator and denominator become zero, and consequently the fraction itself is then 0.

The idea of fractions of this kind first originated about the year 1702, in a contest between Varignon and Rolle, two French mathematicians of some eminence, concerning the principles of the differential calculus, of which the latter was a fierce opponent; and amongst other arguments against the truth of the doctrine which had then been recently introduced, he proposed an example of drawing a tangent to a certain curve, at the point where the two branches intersect each other; and as the fractional expression for the subtangent, according to that method, had both its numerator and denominator equal to zero, or 0, he regarded such a result as absurd, and added it as a proof of the fallacy of this mode of solution. But the mystery was soon explained by John Bernouilli; and upon a renewal of the dispute, still farther by Saurin, who showed that the fraction in the case here mentioned had a real value. These fractions were also the cause of a violent controversy between Waring and Powell in 1765, when these gentlemen were candidates for the mathematical professorship at Cambridge: Waring maintaining that the fraction

\[ \frac{x^n - a^n}{x - a}, \]

when \( x = 1 \), is equal to 4; and Powell, or rather Maferes, who is commonly supposed to have conducted the dispute on the part of the latter, that it was equal to 0, or indeed that it could have no value whatever; and it must be acknowledged that the fame difference of opinion relative to this kind of fractions still exists in all its force. Woodhou's, in his "Principles of Analytical Calculation," in treating of these quantities, after assuming the simple cafe of

\[ \frac{x^n - a^n}{x - a}, \]

the signification of this expression is, that \( x^n - a^n \), to be divided by \( x - a \), and the result of that division is \( x^n + a^n \), or putting \( x = a \), it becomes \( a^n + a^n \), or 2\( a^n \). This result, however, he remarks, is no direct and natural consequence arising from the principles of calculation, but, on the contrary, it is a result arbitrarily obtained, by extending a rule, and observing a certain order in the process of calculation.

To the question, what does

\[ \frac{x^n - a^n}{x - a}, \]

become when \( x = a \); the obvious and logical answer is \( \frac{a^n - a^n}{a - a} \), and the question is, whether in this form it will admit of any further reduction. It is true, if we operate upon this quantity according to the rules laid down in other apparently similar cases, we obtain

\[ \frac{a^n - a^n}{a - a} = a + a = 2a; \]

but here is evidently an extension given to a rule beyond what was first intended; for this rule was instituted for operating on real quantities, whereas in this case we have employed it on quantities having no value whatever, being in fact the division of 0 by 0, for which abstrusely no rule can be given. This, however, is not a case peculiar to these fractions. It is to the fame source we must attribute the introduction of the negative symbol, and all the mysteries attendant upon it, as well as to every kind of imaginary quantity.

In vol. i. p. 219., of Bonnycastle's Treatise of Algebra, we have the following rule for finding the value of vanishing fractions.

1. If both the terms of the given fraction be rational, divide each of them by their greatest common measure; then, if the hypothesis which is found to reduce the original expression to the form \( \frac{a}{b} \) be applied to the refult, it will give the true value of the fraction under consideration.

2. When any part of the fraction is irrational, observe what the unknown quantity is equal to, when the numerator and denominator both vanish, and put it equal to that quantity + and - 1; then if this be substituted for the unknown quantity, and the roots of the fods be extracted to a sufficient number of places, the refult, when \( i \) is put equal to 0, will give the true value of the fraction. From which rule the author obtains the following refults; viz.

1. \[ \frac{x^2 - a^2}{x - a} = 2a, \text{ when } x = a. \]
2. \[ \frac{x^2 - x^1}{1 - x} = -1, \text{ when } x = 1. \]
3. \[ \frac{b (x^n - a^n)}{x - a} = \frac{b}{a}, \text{ when } x = a. \]
4. \[ \frac{x^n - a^n}{x - a} = m a^n - 1, \text{ when } x = a. \]

See Bonnycastle's Algebra, Woodhouse's Principles of Analytical Calculation, and Barlow's Dictionary.

VANISI, in Geography, a town of Turkish Armenia; 21 miles W. of Akalzike.

VAN-LAER, in Biography. See BAMBOCIO.

VANLOO, CARLO, was the son of an artist little known, and was born at Nice in 1705. For some time he resided at Rome, and studied under Benedetto Luti. In 1723 he went to Paris, where he gained the first prize for an historical painting, and was employed with his elder brother, John Baptiste Vanloo, in repairing the paintings of Primaticcio, at Fontainebleau. In 1727 he again visited Italy, and afterwards passed some time at the court of Turin, where he painted a series of pictures from Tasso. On his return to his native country in 1734, he was admitted into the academy, the king conferred upon him the order of St. Michael, and appointed him his principal painter; and he repaid these compliments by his industry and his ability. He had acquired by his studies in Italy more correctness than his countrymen generally possessed, and he certainly prevented the French school from running further into the affected mode of Coupel and De Troyes, and yet his style can only be called loofe and mechanical, with little relish of the higher beauties of art. He died in 1765, at the age of sixty.

VANLOO, MAD, the daughter of Somis, the great violinist of Turin, concert-matter to the king of Sarainia, and wife to the celebrated painter Vanloo of Paris, was born in 1710, and in 1726 she was thought the best singer of her time. We have been a beautiful print of Mad. Somis, from a painting of Vanloo's previous to her marriage. After her nuptials, she settled at Paris, and was living there in 1754. The first wife of the elder Cramer, the excellent performer on the violin, and leader of a band, was a daughter by this marriage; which accounts for her good taste and captivating manner of singing to her own accompaniment on the pedal harp. She was a most accomplished
complied and elegant woman, and we never heard any thing more pleasing than her performance.

VAN-MALDER, concert-master and chamber-musician to prince Charles at Brussells, and leader of the band at that theatre; a composer of spirited and pleasing symphonies, which were long in favour at our national theatres. He composed a comic opera, “La Bagarre,” 1754, for the Italian theatre at Paris, and died at Brussells in 1771.

VAN-MANDER, a painter and author, was born at Meulebeke, near Courtray, in 1548, of a noble family, and received an education suited to his rank. His talents developed themselves at an early period of his life, and particularly a disposition to painting; and he was placed under the tuition of Lucas de Heere; afterwards he became a disciple of Peter Vlerick, an historical painter of some eminence at Courtray, and finished his education in art by a journey to Italy, where he studied for three years. From thence, after painting several pictures, he went to Vienna, accompanied by Spranger, whose friendship he had cultivated, and there received a preëmpted invitation to enter the service of the emperor; but love for his native country prevailed, and thither he returned. He then experienced much encouragement, and was in possession of full employment, when the wars in the Low Countries prevented his enjoyment of it. He took refuge in Haarem, and there with Goltzius founded an academy. Van-Mander united with the talents of a painter that of a poet, and composed tragedies and comedies, several of which were acted with success, with decorations painted by himself; and we are indebted to him for a very useful history of the painters of antiquity and of his own country. He died at Amsterdam, in 1606.

VANN/EUS, Lat., VANEO, STEFFANO, Ital., the name of an Augustine monk, born at Ricianati, a small town in the March of Ancona and Ecclesiastical State, was music director at Ascoli, who published at Rome in 1553, small folio, a most ample treatise on music, in which he has inserted all that preceding books on the subject contained. There is nothing that was new in this at the time of its publication; but no one book then published contains half its contents. Walther has given a long list of the divisions and subdivisions of this work, which is written in Latin, and which, perhaps, is all that will ever be read by those who may obtain possession of the book, which is now become very scarce.

VANNE, in Geography, a river of France, which runs into the Yonne, near Sens.

VANNEN, a small island in the North sea, on the coast of Norway. N. lat. 70° 10'. E. long. 19° 44'.

VANNES, a sea-port town of France, and capital of the department of the Morbihan, at the union of two small rivers, which form a harbour in the lake Morbihan; before the revolution, the see of a bishop. The principal commerce is in corn, bar-iron, and fish. It has two suburbs, one of which is larger than the town itself. In 1800, the royalists, under Georges, were defeated by the republicans, under Brune; 13 paff N.W. of Nantes. N. lat. 47° 39'. W. long. 2° 40'.

VANNES, La, a town of France, in the department of the Ardeche; 6 miles S.W. of Joyeuse.

VANNI, FRANCESCO, Cavalier, in Biography, was the son of a painter of little celebrity at Vienna, who died whilst he was very young, and was born in 1563. He went to Rome when he was about sixteen, and entered the school of Giovanni de Vecchi, and became an imitator of Barocci. He also went to Parma to draw from the fame fount as Barocci, viz. the works of Corregio and Parme-
grateful to the sheep than that on dry moory land on gravel, being often scanty, woody, and rigid. The excess of moisture, too, in them may probably, it is thought, affect the qualities and healthiness of the heath, as food for sheep. Besides, there is in such moors a greater proportion of the croft-leaved fern than is found on dry sheep-walks; and it is thought by many that sheep do not relish it so well as the common kind, when the shoots are young. From these accounts, it would seem that the true nature of the complaint is not yet well understood, but it is probably some defect in the lactic organs, by which a due supply of nourishment is prevented from being taken up, the consequence of which is a state of atrophy and emaciation in the animal.

The remedies which have been chiefly depended upon in these cafes by sheep-farmers, are those of either removing the sheep into fresh grassy lands, or the change of them from the peaty pasture to one that is sweet and dry, during the autumn and winter. The latter, it is said, not only proves a sure of the disease, but wholly prevents it. In some cafes, medicines of the mild stimulating balsamic kind might perhaps be used with benefit.

VANRHEDIA, in Botany, Plum. Gen. 45. t. 18. See Rhedia.

VANS, les Dames, or Vanaut, in Geography, a town of France, in the department of the Marne; 12 miles N.E. of Vitry le Choiseu.

VANSIRE, in Zoology, a species of weaflf with short ears: the hair brown at the roots, barred above with black, and ferrugineous; the tail of the same colour; the length from nine to about fourteen inches, and the tail nearly ten. This animal inhabits Madagascar.

VANSMER, Paul, in Biography, a portrait painter, born at Antwerp in 1576: he for a while resided at Amsterdam, and with his brother Bernard practised his art there with success. About 1605 or 1606, he visited England, and was very much employed here; as many of his portraits are to be found in the houses of our nobility. He had the honour to be employed to paint King James I., and his queen, Anne of Denmark. He died at about the age of 45, and was buried in St. Martin's, as appears by the register, January 5, 1621.

VANSTOWN, in Geography, a town of the Cherokees, on the river Alabama.

VANSWITZER, in Biography. See Switzen.

VANT, or VAUKT. See Van.

VANTANA, in Botany, Jull. 434: a name of Aublet's, which Schreber, according to correct rule, could not retain. See Lemisia.

VANT-CHIN, in Geography, a city of China, of the second rank, in Quang-nan; 1417 miles S.S.W. of Peking. N. lat. 23° 7'. E. long. 160° 51'.

VAN-TEN, a city of China, of the second rank, in Yun-nan; 1295 miles S.W. of Peking. N. lat. 24° 29'. E. long. 109° 14'.

VAN-UDEN, Lucas, in Biography, a landscape painter, born at Antwerp in 1595. He was principally his own instructor, and cultivated his talents by an affiduous attention to nature, and studying the landscapes of Rubens, whom he imitated, and who employed him to paint on the back-grounds of his pictures; which he did with so much courtesance of style, that they appear to be the work of the same hand. He lived to the age of 65: he had a brother, Jacques Van-Uden, also a landscape painter, but inferior to him.

VANVRY, in Geography, a town of France, in the department of the Côte d'Or; 6 miles E.S.E. of Châtillon-sur-Loire.

VANZE, a town of Naples, in Basilicata; 10 miles S.E. of Venice.

VAPINCUM, in Ancient Geography, Gap, a town of Gallia Narbonensis, between Caturiae and Alabon.

VAPORARIUM, or VAPOROSUM Balneum, Vapour-Bath, in Chemistry, a term applied to a chemist's bath, or heat, in which a body is placed, so as to receive the fumes of boiling water.

The balneum vaporosum consists of two vessels, disposed one another in such manner, as that the vapour raised from the water contained in the lower, heats the matter enclosed in the upper.

The vapour-bath is very commodious for the distilling of odoriferous waters, and the drawing of spirit of wine. On this subject, see Bath, in Chemistry.

We also use the term vapour-bath, when a sick person is made to receive the vapours arising from some liquid matter placed over a fire.

Many contrivances have been proposed for this purpose; and their expediency and utility are best known to those who are conversant in this business. See Aqueous Baths.

VAPORATION, Vaporatio, in Chemistry, a term applied to the action of a fume, or vapour.

Vaporation is a kind of bathing, or rather of fomentation, by which the warmth, or humidity, of a vapour is made to act on some other body, that is to be warmed or moistened.

VAPOROSUM Balneum. See Vaporarium.

VAPOUR, Vapour, in Meteorology, a thin vehicle of water, or other humid matter, filled or inflated with air; which, being raised to a certain degree by the action of heat, ascends to a certain height in the atmosphere, where it is suspended, till it returns in form of rain, snow, or the like. An assemblage of a number of particles, or vehicles of vapour, constitutes what we call a cloud.

Some use the term vapour indifferently, for all fumes emitted, either from moist bodies, as fluids of any kind; or from dry bodies, as sulphur, &c. But Sir Isaac Newton, and other authors, better distinguished between humid and dry fumes, calling the latter exhalations.

For the manner in which vapours are raised, and again precipitated, see Cloud, Dew, Rain, Barometer, and particularly Evaporation and Meteorology.

We shall here add, with respect to the principles of solution adopted to account for evaporation, that Dr. Halley, about the beginning of the last century, seems to have been acquainted with the solvent power of air on water; for, he lays, that, supposing the earth to be covered with water, and the sun to move diurnally round it, the air would of itself imbibe a certain quantity of aqueous vapours, and retain them like salts dissolved in water; and that the air, warmed by the sun, would sustain a greater proportion of vapours, as warm water will hold more dissolved salts; which would be discharged in dews, analogous to the precipitation of take in the cooling of liquors. Phil. Trans. Abrid. vol.i. p. 127.

Mr. Eales, in 1755, endeavoured to account for the ascent of vapour and exhalation, and their suspension in the atmosphere, by means of the electric fire. The sun, he acknowledges, is the great agent in detaching vapour and exhalations from their matrices, whether he acts immediately by himself, or by his rendering the electric fire more active in its vibrations; but their subflebent ascent he attributes entirely to their being rendered specifically lighter than the lower air, by their conjunction with electrical fire: each particle of vapour, with the electrical fluid that surrounds it, occupying a greater space than the same weight.
VAPOUR.

weight of air. Mr. Eales also endeavours to shew, that the ascendent and descendent of vapour, attended by this fire, are the cause of all our winds, and that they furnish a satisfactory solution of the general phenomena of the weather and barometer. (Phil. Trans. vol. xlv. p. 124, &c.) Dr. Darwin, in 1777, published remarks on the theory of Mr. Eales, with a view of confuting it; and attempted to account for the ascendent of vappours, by considering the power of expansion which the confluxent parts of some bodies acquire by heat, and also that some bodies have a greater affinity to heat, i.e. acquire it sooner, and retain it longer than others. On these principles, he thinks, it is very intelligible how water, whose parts appear from the zoëlipile to be capable of immeasurable expansion, should by heat alone become specifically lighter than the common atmosphere. A small degree of heat is sufficient to detach or raise the vapour of water from the mafs to which it belongs; and the rays of the sun communicate heat only to those bodies by which they are refracted, reflected, or obstructed, whence, by their impulse, a motion or vibration is caused in the parts of such bodies. Hence he infers, that the sphericles of vapour will, by refraction of the solar rays, acquire a constant heat, though the surrounding atmosphere remain cold. If it be asked, how clouds are supported in the absence of the sun? it must be remembered, that large mafs of vapour must for a considerable time retain much of the heat they have acquired in the day; at the same time reflecting, how small a quantity of heat was necessary to raise them, and that doubleafs even a leaf will be sufficient to support them; as from the diminished preffure of the atmosphere at a given height, a leaf power may be able to continue them in their preffent rate of rarification; and lastly, that clouds of particular shapes will be sustained or elevated by the motion they acquire from winds. Phil. Trans. vol. i. p. 246.

For the effect of vapour in the formation of springs, &c. see Spring and River.

The quantity of vapour raised from the sea by the warmth of the sun, is far greater than one would imagine. Dr. Halley has attempted to estimate it. The result of this estimate is contained in the following articles.

1. That water falted to about the fame degree as salt-water, and exposed to a heat equal to that of a summer's day, did, from a circular surface of about eight inches diameter, evaporate at the rate of six ounces in twenty-four hours. Whence, by a calculus, he finds that the thickness of the pellicle or flic of water, evaporated in two hours, was the fifty-third part of an inch; but, for a round number, he supposes it only a sixtith part; and argues, hence, that if water as warm as the air in fummer evaporates the thickness of one-fiftieth part of an inch in two hours, from its whole surface; in twelve hours it will evaporate the tenth of an inch; which quantity, he observes, will be found abundantly fufficient to fupply all the rains, springs, dews, &c.

In effeét, on this principle, every ten square inches of the surface of the water yield in vapour per diem a cubic inch of water; and each square foot half a wine pint; every space of four feet square, a gallon; a mile square, 6914 tons; and square degree of sixty-nine English miles will evaporate 33 millions of tons a day; and the whole Mediterranean, computed to contain 165 square degrees, at least 5280 millions of tons. Phil. Trans. N° 189, or Abr. vol. ii. p. 108, &c. See River.

2. A surface of eight square inches, evaporated purely by the natural warmth of the weather, without either wind or sun, in the course of a whole year, 16,292 grains of water, or sixty-four cubic inches; consequently the depth of water thus evaporated in one year amounts to eight inches. But this being too little to answer the experiments of the French, who found that it rained nineteen inches of water in one year at Paris; Dr. Heberden has found, that a rain-gage fixed below the top of a house, received above a fifth part more rain than another of the same size above the top of the same house; and that there fell upon Weilminfler Aby very much above one-half of that which fell in the same space below the tops of the houses; and by several experiments made by Dr. Dobson of Liverpool, it appears, that the quantity of rain received in a vessel placed on the ground exceeded that received by another of the same dimensions eighteen yards higher than one-third, and less than one-half. Phil. Trans. vol. lix. art. 47, and vol. lxvi. art. 13. p. 256. See Rain.

With regard to the cause of this difference, it may be observed, that as in chemical precipitations a greater portion of the precipitating substance will be received on the real bottom of a vessel containing the solution than on a euposed false bottom placed in any where above it, and that in proportion to its height above the real bottom; so a greater quantity of water, confidering rain as a precipitation of water before diffolved in air, ought, on parting with its former solvent, to fall on the surface of the earth than on an imaginary horizontal plane of the fame dimensions above it; and though the cafes are not exactly parallel, yet the drops of rain in their deacent must be somewhat increased either in number or size; partly by succedively impinging on the aqueous particles contained in the air through which they pass, and by attracting others in virtue of their being pollefled of a different electricity; and partly by the spontaneous separation and precipitation of that moisture, which is known to be contained in considerable quantities in the air at all times, and the appearance of which, dripping down the walls of our houses, &c. is one of the popular signs of approaching rain. (Monthly Review, vol. xlv. p. 322.)

Dr. Dobson states the annual evaporation at Liverpool, taking the medium of four years, at 35.78 inches. Dr. Halley fixes the annual evaporation of London at 48 inches. See Phil. Trans. vol. lxvii. part i. p. 252.

3. The effect of the wind is very considerable, on a double account; for the fame obervations shew a very odd quality in the vapours of water, i.e. that of adhering and hanging to the surface that exhaled them, which they clothe, as it were, with a fleece of vaporous air; which once invulelling the vapour, it thenceforward rifes in much less quantity. Whence, the quantity of water lost in twenty-four hours, when the air was very still from wind, was very small, in proportion to what went away when there was a strong gale of wind abroad to dissipate the fleece, and make room for the emulsion of vapour; and this, even though the experiment was made in a place as close from the wind as could be contrived.

Add, that this fleece of water hanging on the surface of waters in still weather, is the occasion of very strange appearances, by the refraction of the vapour's differing from and exceeding that of common air; whence every thing appears raised,
raised, as houses like steeples, ships as on land above the water, the land raised, and as it were lifted, from the sea, &c. 4. The same experiments shew, that the evaporation in May, June, July, and August, which are nearly equal, are about three times as great as those in the months of November, December, January, and February. Phil. Trans. No. 212. or Abr. vol. ii. p. 110, &c.

Dr. Brownrigg, in his "Art of making Common Salt," p. 189, fixes the evaporation of some parts of England at 73.8 inches during the months of May, June, July, and August; and the evaporation of the whole year at more than 140 inches. The evaporation of the four summer months at Liverpool, on a pond of four years, was found to be only 18.88 inches. Dr. Hales calculates the greatest annual evaporation from the surface of the earth in England at 6.66 inches; and therefore the annual evaporation from a surface of water, is to the annual evaporation from the surface of the earth in Liverpool, as 36 to 6, or as 6 to 1. Phil. Trans. vol. lxvii. ubi supra.

Vapours, Fiery, Habitum Ignei, a term used by some to express those exhalations from the earth, which either take fire of themselves on their burning forth into the air, or are readily inflammable on the bringing of a candle to them. See DAMP, GAS, HYDROGEN, METEOR, and VENTILATION.

Many of the supposed burning lakes are owing to these fumes burning up through the water, and not to any quality of the water itself. Our famous burning-well at Wiggon, in Lancashire, is of this kind. The common people affirm, that the water of this spring burns like oil; but there is nothing of truth in this. There burns up a vapour through the earth in this place, which keeps the water bubbling, as if boiling over in the fire, though it is not warm; and the stream of this breath may be felt issuing up in these places like a strong wind. This breath alone is inflammable, and takes fire at the approach of a candle, burning with considerable violence for some time. There are coal-pits in the neighbourhood, and the air is certainly of the same kind with that inflammable vapour often met with in those places, and which may also be prepared from iron disolved in a proper menstruum. The water itself, taken from the place, does not burn; and if the bottom be made dry, the vapour which ascends from it will burn as strongly as if the water were there. The flame is not discoloured like that of sulphureous bodies, nor has it any bad scent; and the fumes, as they are felt burning out of the earth, by the hand held over the place, are hot. Phil. Trans. No. 20.

Vapour-Boat. See VAPORIUM, and BATH.

Vapours, in Medicina, a disease popularly called the Basty, or the hypochondriac disease; and in men particularly the febren. See HYPochondriasis.

Vapours supposed to be emitted from the womb, in women, are what we otherwise call hysterical affections, or suffocations, or fits of the mother. See HYSTERIA.

VAPPA, a word used by the ancients to express dead wine, or wine deprived of all its spirituous part.

The word is also metaphorically applied to a peculiar state of the blood, when it is in a low, dispirited condition, as is the case even in healthy persons, when worn out with excessive labour, and in cachectic and scrofulous persons.

VAR, in Geography, one of the twelve departments of the S.E. region of France, formerly Lower Provence; a maritime territory in N. lat. 43° 30', bounded on the N. by the department of the Lower Alps, on the E. by the county of Nice, on the S. and S. E. by the Mediterranean, and on the W. by the department of the Mouths of the Rhone. Its territorial extent in kilometres is 7510, and in square leagues 378; and its population consists of 269,142 inhabitants. It is divided into 4 circles or districts, 32 cantons, and 210 communes. The circles are, Brignoles, containing 66,034 inhabitants; Draguignan, 71,383; Graffe, 55,242; and Toulon, 76,485. According to Haffenratz it is 30 French leagues in length, and 20 in breadth; its circles are 9, its cantons 80, and its population consists of 275,472 persons. Its capital is Draguignan. Its contributions in the eleventh year of the French era amounted to 2,258,028 francs; and its charges for administration, judiciary, and for public instruction, were 274,032 francs 28 centimes. The northern districts, covered with mountains, yield little grain; but throughout the department, grapes, fruits of all sorts, medicinal plants, forests and pastures abound. The plains of Brignoles and Toulon are planted with fruit-trees and vines. Here are mines of different metals, and quarries of marble.

VAR, a river which rises in the department of the Lower Alps, about 10 miles S. from Barcelonne, crosses the county of Nice, and, in part, separates it from France, till it runs into the Mediterranean; 4 miles W. of Nice. It gives name to the department.

VARA, in Ancient Geography, an etuary of Britain, which is the birth of Tayne in Sutherland.

VARA, in Commerce, a long measure in Spain and Portugal. At Lisbon, the vara is 5 palmos (or spans), and the covado (another long measure) is 3: the palmo is 8 inches of Lisbon, or 8½ English inches; the covado is 30½ French lines, or 26½ English inches. Goods not fold by the piece, are generally sold by the covado, except some sorts of coarse linens, which are sold by the vara. The Lisbon foot is half a covado, or 13½ English inches; and 9 feet of Lisbon are 10 English feet. At Oporto, the vara is always 5 palmos de craveira (see PALMO), or 40 Portuguese inches = 43½ English inches; and the covado is 3 palmos de craveira avançados (or good measure), and is 24½ inches of Portugal, or 26½ English inches. The vara (as a brais or wooden measure) is sometimes divided on one side into 43½ English inches, and on the other side it is marked at 26½ English inches. Each of these measures is divided into 3 tercas, 4 quartas, 6 sexas, and 8 oitavas. In Spain, the vara, a measure for cloth, linen, and silk, is 3 feet, or 4 palmos; and is, therefore, 33½ English inches; the palmo measuring 9 pulgadas, or 12 dedos, which equal 8½ English inches; but the palmo de riebeira, used for measuring masts, &c. is only 3 inches. A braza or tosea is 2 varas, or 6 feet; i.e. 66½ English inches: a paso or pace is 5 feet; an estadal, 12 feet, or 4 varas; and a cuerda, 84 varas. The distances in Spain, on roads made since the year 1766, are laid down at the rate of 8000 varas to the league, i.e. 7416 English yards; so that 5 such leagues are = 21 English miles nearly; but the juridical league is 5000 varas, or 4635 English yards; hence 8 of these are = 21 English miles. Kelly's Un. Camb. See Tables of Weights and Measures.

VARADA, in Ancient Geography, a town of Hifpania Citerior, belonging to the Carpetani. Ptolemy.

VARADEH, in Geography, a town of Egypt, on the coast of the Mediterranean; 22 miles N.E. of Cathe.

VARADES, a town of France, in the department of the Lower Loire; 6 miles N.E. of Ancenis.

VARAGE, a town of France, in the department of the Var; 4 miles N.W. of Barjols.

VARAGGLO, a town of Genoa; 5 miles N.E. of Savona.

VARAGIANS, VARANGIANS, or Vарangi, called also Northmanni, the name of a people who had a consider-
able share in founding the Russian state, and who were a northern tribe of Gothic descent and of warlike disposition and character. Their original country was probably Scandinavia; and they confided of a combined multitude of Danes, Swedes, and Norwegians, who, perpetually in quest of adventures, established governments in the western and eastern parts of Europe, and produced revolutions, especially in the fourth, the consequences of which extended through one quarter of the globe. The first trace of their maritime expeditions is discoverable about the year 516; though it is thought probable that they carried on their piracies at an earlier period, and were generally comprehended under the name of Franks, who already appeared under the emperor Probus as entreprensing mariners. In the year 795, they were first perceived in Ireland. About the year 813, they began their incursions by the Elbe into Frieland and Flanders; in process of time they advanced to Aquitaine and along the Seine; about the year 840, they ravaged France; and in 857, made the conquest of Luna, and afterwards of Pisa, in Italy. In the year 862, Rurik founded the Russian monarchy, and became the father of a dynasty which reigned above 700 years. Accordingly, in the ninth century the Varangians conquered from the Russians, a kindred northEuropean people, the earlist mention of whose name is in the year 839, before Rurik's reception in Novgorod, the modern districts of Reval, St. Petersburg, and Archangel; and subjected the Scavonians, Krivitanches, Tchudes, Vehlenians, and Marnes, to a tribute. The Russians retired to Finland and Karelia; but the Scavonians, in conjunction with the rest of the mentioned nations, drove out the Varangians, and formed themselves at the lake Ilmen, near Novgorod, into a federative democratic republic. Although the Varangians composped the predominant, and under Rurik the most consequential part of the people, yet Scavonians and Russions were soon blended into one nation. As piracy was the exercise, the trade, the glory, and the virtue of the Scandinavian youth, the Baltic was the first scene of the naval achievements of the northern adventurers; they then visited the eastern shores, the select residence of Finnic and Scavonian tribes; and the primitive Russions of the lake Ladoga paid a tribute, the skins of white squirrels, to these strangers, whom they saluted with the title of Varangians, or corsairs. Their superiority in arms, discipline, and honour, commanded the fear and veneration of the natives. In their wars against the more inland savages, the Varangians confederated to serve as friends and auxiliaries, and gradually, by choice or conquest, obtained the dominion of a people, whom they were qualified to protect At length Rurik appeared; his influence was extended by his brothers; the example of service and usurpation was imitated by his companions in the southern provinces of Russia; and their establishments, by the usual methods of war and affilution, were cemented into the fabric of a powerful monarchy.

As long as the descendants of Rurik were considered as aliens and conquerors, they ruled by the sword of the Varangians, distributed citadels and subjects to their faithful captains, and supplied their numbers with fresh streams of adventurers from the Baltic coast. But when the Scandinavian chiefs had struck a deep and permanent root into the soil, they mingled with the Russions in blood, religion, and language, and the first Wladimir had the merit of delivering his country from these foreign mercenaries. They had feated him on the throne; his riches were insufficient to satisfy their demands; but they listened to his pleasing advice, that they should seek, not a more grateful, but a more wealthy matter; that they should embark for Greece, where, instead of the skins of squirrels, silk and gold would be the recompense of their service. At the same time the Russian prince admonished his Byzantine ally to disperse and employ, to recom pense and restrain, these impetuous children of the north. Contemporary writers have recorded the introduction, name, and character, of the Varangians: each day they rove in confidence and ease; the whole body was assembled at Constantinople to perform the duty of guards; and their strength was recruited by a numerous band of their countrymen from the island of Thule. On this occasion, the vague appellation of Thule is applied to England; and the new Varangians were a colony of English and Danes who fled from the yoke of the Norman conqueror. The habits of pilgrimage and piracy had approximated the countries of the earth; these exiles were entertained in the Byzantine court; and they preferred, till the last age of the empire, the inheritance of spotless loyalty, and the use of the Danish or English tongue. With their broad and double-edged battle-axes on their shoulders, they attended the Greek emperor to the temple, the senate, and the hippodrome; he slept and feasted under their trysty guard; and the keys of the palace, the treasury, and the capital, were held by the firm and faithful hands of the Varangians.

About the time of Rurik, a Norman of a similar name, Rurich, became famous in the history of Holland. Soon after this, Olof and Dir founded another sovereignty at Kieff. In the tenth century Ravagual reigned in Polotk, from whose daughter, Rogned, the Russian annals derive the grand-dukes of Lithuania. About the year 1000, they took Apulia from the Greeks, and Sicily from the Harabians. They gave Normandy its name, after Rollo had wrecked that country from the kings of France. Even the conquest of England by the Danes, in some degree formed a part of the history of these northern adventurers. Took's Ruif. vol. i. Gibbon's Rom. Emp. vol. x. See Scavonians.

VARAHA, in Hindoo Mythology, a name of the god Vifhnu, meaning a boar; he having in one of his ten grand incarnations assumed that form, called Varahavatara; which see.

VARAHAVATARA, is one of the ten grand incarnations of their god Vifhnu. In this god assumed, as is commonly said, the form of a boar, Varaha; but is usually represented in pictures, with the head of that animal on the body of a man, four-armed, holding the attributes of Vifhnu. On the elevated bulbs of the boar rests a cresent, containing in its concavity an epitome of the earth, which had been submerged in the ocean, as a punishment for its iniquities. So that this avatar, or incarnation, the third of Vifhnu, seems to be a repetition of the story of the deluge, like the two former, which are named Maityavatara and Kurmavatara, noticed under those articles. The second combines with it a portion of astronomical allegory, and none of the other ten avatars have any apparent reference to the general catastrophe, so pointedly indicated by the three first, which are understood to have occurred in the earlist ages of Hindoo history; if such a chaotic mass as their fabulous records may be dignified by such a title.

There are many fables accounting for the shape assumed on this occasion by Vifhnu, which our limits will not allow us to recite.

VARALLO, in Geography, a town of Italy, in the department of the Gogna, on the Sepia; 24 miles N.N.W. of Novara. N. lat. 45° 49'. E. long. 8° 14'.

VARAMBON, or VAREMBON, a town of France, in the department of the Ain; 2 miles S.W. of Pont d'Ain.

VARAMUS,
VAR

VARAMUS, in Ancient Geography, a river of Italy, in Venetia, which discharges itself into the Alenus. Phin.

VARANASI, the classical name for the city of Benares, in the East Indies. (See Benares.) This name is said to comprise that of two rivers which form a junction near the city.

VARANGI. See Acoluthin.

VARANGUEBEC, in Geography, a town of France, in the department of the Channel; 10 miles W. of Careton.

VARANIA, in Ancient Geography, a town of Sciria, taken possession of in the year 1143 by Perigord, general of Manuel, emperor of Constantinople.

VARANO, in Geography, a lake of Naples, in Capitanata, which communicates with the Adriatic; 13 miles N.N.W. of Monte St. Angelo.

VARANO de Marchii, a town of the duchy of Parma; 12 miles W.S.W. of Parma.

VARASDIN, a town of Croatia, on the S. side of the Drave, with a castle and citadel; near it is a warm bath; 186 miles N.W. of Belgrade. N. lat. 46° 30'. E. long. 16° 25'.

VARASELLYGUNGE, a town of Hindoostan, in Bahar; 14 miles S.S.E. of Bahar. N. lat. 25° 2'. E. long. 85° 50'.

VARBRESIE, a town of France, in the department of the Rhône and Loire; 9 miles N.W. of Lyons.

VARCES, a town of France, in the department of the Ibre; 7 miles S. of Grenoble.

VARCHI, Benedetto, in Biography, was born at Florence in the year 1502, and destined to trade; but manifesting an inclination for literature, he was sent to the university of Padua. His progress in the belles lettres induced his father to educate him for the law at Pisa. But Benedetto, after the death of his father, devoted himself entirely to literature; and when the Strozzi, to whom he was attached, were obliged to quit Florence, he followed them, in 1534, first to Venice and then to Bologna. At Bologna, and also in Padua, he spent some years in study, and in cultivating an intercourse with learned men. At Padua he became a member of the Academy degli Infiarnati, and read public lectures on morals, and several dissertations on the poems of Petrarch, Bembo, and others.

Cosimo I., grand duke of Tuscany, apprized of his reputation, recalled him to Florence, and alligned to him the office of writing a history of the late revolution in that city, with a yearly stipend. Whilst he was thus employed, he was attacked in the night by several persons, who apprehended that his narrative would not be favourable to them, and inflicted on him many wounds. When he recovered, he declined, from motives of prudence or policy, to inform against the perpetrators, though he knew them. In the Florentine academy, of which he was one year confidul, he delivered lectures. Cosimo recompensed his services with the provostship of Monte Varchi, on which occasion he took holy orders; but before he could remove thither, he died of an apoplexy in 1553, at the age of sixty-three; and his eulogy was delivered, at his funeral, by Lionardo Salvisti.

Varchi was a man of general literature. He wrote a Florentine history, comprising the period from 1527 to 1538, in which he was chargeable with gross adulation to the house of Medici. He also published several harangues, academical and funeral; poetical pieces, and a comedy in Italian. As a grammarian, he gained reputation by his dialogue "Eroclano," treating particularly of the Tuscan language. His translations of "Seneca on Benefts," and of the "Philosophical Confutation of Boethius," into Italian, are deemed elegant. His "Lezioni lette nel Accademia Fiorentina" comprehends much various erudition. Upon the whole, Varchi ranked as a man of learning, to whom Italian literature was much indebted. Moreri. "Tiraboschi. Gen. Biog.

VARCIA, in Ancient Geography, a town of Belgic Gaul, upon the route from Cambrai to Andematunum, between Vefontio and Andematunum, according to Antonine's itinerary.

VARDA, in Geography, a river of Europe, which rises near Kolumbats, in Macedonia, and runs into the gulf of Saloniki; 16 miles W.S.W. of Saloni.

VARDEGUS, a small island of Ruffia, in the Frozen ocean; 100 miles N.N.W. of Kola. N. lat. 70° 25'. E. long. 30° 34'.

VARDEN, or Wardan, a town of Egypt, on the W. branch of the Nile, formerly called Latopolis. In modern times it has been famous or rather infamous for the abode of pirates, who robbed the vessels which navigated the Nile. These robbers were routed out, and dispersed by Ali Bey. Here Father Sigh burned heaps of ancient manuscripts, deposited in a dove-house, as books of magic; 18 miles N.N.W. of Cairo.

VARDHUYS. See Wardhuys.

VARDLE, in Rural Economy, a term applied in some cafes to the eye or thimble of a gate, which has a spike only. See Gate.

VARDON, in Geography, a town of Abafcia, on the Black sea; 28 miles W.N.W. of Mamak.

VARDONES, in Ancient Geography, a people of Germany, who formed a branch of the Vandals.

VARDULI, a people of Hispania Citerior, upon the coast, between the Pyrenees to the E. and the Carlttes to the W. Trolemy has assigned to them the town of Menorca.

VARECA, in Botany, a bad and merely temporary name, taken from Walchwarza, by which this fruit appears to be known in Ceylon. Gartner received it, with that appellation, from the collection of seeds at the Leyden garden, and thought it might constitute a new genus. We shall give his description.—Gartn. v. 1. 290. t. 60.—Cliffs and order, as well as the Nat. Ord., unknown.

Gen. Ch. Flower unknown. Peric. Berry superior, of one cell, half an inch long, ovate, with six angles, tipped with a short point; supported at the base by a small round disk, having six light notches. Coat coriaceous, thin. Pulp by age becomes fpongy and membranous, divided into partial cells for the reception of the seeds. Seeds numerous, rather large, nearly ovate, rendered variously angular by mutual pressure, their colour a smoky brown, all inclosed in separate partial cells; the outer seeds attached to the coat of the fruit; the inner imbedded in its pulp. Integument double; the outer thick, coriaceous; inner membranous, very thin. Albumen the shape of the seed, thick, white, of the substance of an almond. Embryo nearly the size of the alburnus, compressed, pale yellow. Cotyledons ovate, or rounded, leaft, flat, very thin. Radicle long, nearly cylin- drical, centripetal, or indeterminate.

Eff. Ch. Flower... Berry superior, of one cell; pulp in many partial cells, appropriated to each seed. Seeds inserted into the coat of the berry.

Gartner oberves, that the structure of this fruit agrees, in many points, with that of the Gourd tribe, Cucurbitaceae; but it differs from all hitherto known of that tribe, in being fuperior,
superior, and in having remarkably albuminous seeds, whereas the Cucurbitaceae usually have no albumen. We would remark, with due deference to this justly celebrated caryological gift, that the partial cells of the pulp appear to be merely what must occur, in the drying up of any such berry, and probably have no existence in a recent state of the fruit. They are therefore scarcely entitled to be mentioned in the essential character.

VAREILLES Sommeres, in Geography, a town of France, in the department of the Vienne; 7 miles N.E. of Civray.

VAREL, a town of Germany, in the county of Oldenburg; 22 miles N. of Oldenburg.

VARELLE, a small island in the Chiffenea, near the E. coast of Malacca. N. lat. 3° 18'. E. long. 104°.

VAREN, a town of France, in the department of the Aveiron; 18 miles N.W. of Alby.

VARENA, a town of Italy, on the lake of Como; 15 miles N.E. of Como.

VARENE, a town of Canada, on the right bank of the St. Laurence. N. lat. 45° 41'. W. long. 73° 10'.—Allo, a town of France, in the department of the Allier; 10 miles N. of Cuffet.—Allo, a town of South Carolina; 20 miles S.E. of Queenborough.

VARENNE le Grand, a town of France, in the department of the Saône et Loire; 6 miles S. of Châlons.

VARENNES, a town of France, and seat of a tribunal, in the department of the Meuse. In this town the king and queen of France, with the dauphin, the princes royal, and the princess Elizabeth, were stopped in their journey to Montmedy, when they attempted to escape, in the month of June 1791; 7 miles N. of Clermont en Argonne. N. lat. 49° 14'. E. long. 5° 7'.—Allo, a town of France, in the department of the Upper Marne; 6 miles S.W. of Bourgogne.

VARENTUM, Varentum, in Ancient Geography, a town of Italy, in Etruria, according to the Itinerary of Antonine.

VARESA, in Geography, a town of Genoa; 10 miles N.N.W. of Brugnato.

VARESIO, a town of Italy, capital of the department of the Verbano; 24 miles N.N.W. of Milan. N. lat. 45° 50'. E. long. 8° 49'.

VARGAS, Luis de, in Biography, a Spanish painter of celebrity, was born at Seville in 1528. He went to Italy to improve his talents, and passed seven years in Rome, where he principally directed his attention to Raffaello and P. Perugino's works. When he returned to Seville, he found a formidable rival in Pedro Campana, and he therefore returned to Italy to cultivate his powers still farther; and on returning a second time to his native city, obtained reputation, and employment. He painted for the cathedral two pictures, viz., Christ bearing his Cross, and Adam and Eve; the latter of which is regarded as his master-piece. He executed several other works for the churches in Seville, both in oil and fresco; and he was no less distinguished for his skill in portraiture, particularly in his portrait of Donna Juana Cortes, duchess of Alcala. He died at Seville in 1590, aged 63.

VARGAS Menia, Francesco de, a Spanish lawyer, who occupied several posts in the judicature under Charles V., and became advocate-şical in the supreme council of Castile, was sent by Charles, in 1548, to Bologna, to protest against the translation of the council of Trent to that city. After the dissolution of this council, he spent seven or eight years in a public capacity at Venice. Being ordered by Philip II. to act as resident deputy to the Spanish ambassador at Rome, his known learning and integrity caused him to be much consulted by the cardinals on the subject of episcopal jurisdiction. On his return to Spain, he was nominated a counsellor of state; but at length retired from the world to the monastery of Cifnos near Toledo. He was author of several works; particularly " De Episcoporum Jurisdictione, et Pontificis Maximis Authoritate," Venet. 1703; "Commentaries upon War against the Infidels," etc. In 1700, Le Vaflor published in French, at Amsterdam, "Letters and Memoirs of Vargas," relative to the council of Trent, which are said not to be very respectful to that assembly. Moreri.

VARGAS, in Geography, a town of Spain, in the province of Biscay; 11 miles S.S.W. of Santander.

VARGEL, or Vargula, an ancient town of Germany, in the territory of Erfurt; 10 miles N.W. of Erfurt.

VARGO, a town of Spain, in Catalonia; 14 miles N. of Sollona.

VARHELY, a town of Transylvania, built on the ruins of Sarmizagetusa, the ancient capital of Dacia, afterwards named by Trajan, Ulphia Trajana; 60 miles E. of Temefvar.

VARI. Persons were formerly so termed, when their legs were deformed, and their toes turned in an unusual degree inwards.

VARI, in Medicine, hard, inflamed tubercles, occurring on the face and neck of young people, of both sexes, after the commencement of the period of puberty.

This eruption, which disfigures the countenance at that period of life when personal appearance is usually of the greatest importance in the estimation of the persons affected, has been therefore the object of medical attention from the earliest ages, though in itself but a trivial complaint. Celsus oberves, that the Roman ladies in his time were so solicitous of maintaining their beauty, that he deemed it necessary to mention the remedies for this affection of the skin, which otherwife he considered as too trifling for the notice of the physician. "Pene ineptiae sunt, curare varia et lenticulas et phylites (freckles and fun-spots); fed eripi tamen femina cura cultis fui non potest." (De Medicina, lib. vi. cap. 5.) The circumstance of this eruption occurring at the age of puberty has given rise to the appellations given to it by the Greek physicians, namely, iontob and acme. The term iontob signifies the lanugo, or first down of the beard, during which it begins; and γαρδερ καιρων, implying that it appears at the acme, or period of full growth and evolution of the body. (See Julius Pollux, Onomasticon, lib. iv. cap. 25. Aétius, Tetrabibl. ferm. iv. cap. 13, &c.) Under this term acme, Dr. Willan arranged the disease in the order of tubercles, and described four varieties of the eruption, with the epithets simplex, punctata, indurata, and rofacea. See Dr. Bateman's Practical Synopsis of Cutaneous Diseases, according to the Classification of Dr. Willan, p. 275.

The acme, then, consists of an eruption of these vari, or distinct, hard, inflamed tubercles, which are sometimes permanent for a considerable length of time, and sometimes suppurate very slowly and partially, forming only a little matter at the top. They usually appear on the face, especially on the forehead, temples, and chin, and not unfrequently on the neck, shoulders, and upper part of the breast, to the extent that might be covered by a tippet; but never descending to the lower parts of the trunk, or appearing on the extremities. This, however, does not depend on the parts being uncovered; for the limitation is the same in both sexes. As the progress of each tubercele is slow, and they appear in succession, they are generally seen at the same time in their various stages of growth and decline; and, in the
the more violent cases, are intermixed also with the marks or velliges of those which have subfided.

In different cases, the progress and appearance of the eruption vary considerably, which has given rise to the subdivision into species suggested by Dr. Willan. Thus in the acne simplex, the eruption consists of small vari, which appear finely, and are not very numerous, nor accompanied by much inflammation, nor by any intermediate affection of the skin. Many of the tubercles do not proceed to supuration; but gradually rise, become moderately inflamed, and again slowly subside, in the course of eight or ten days, leaving a transient purplish red mark behind. But others go on to a partial suppuration, the whole processes of which occupies from a fortnight to three weeks. The tubercles are first felt in the skin like a small hard seed, about the size of a pin's head, and enlarge for three or four days, when they begin to inflame: about the sixth or seventh day they attain their greatest magnitude, are prominent, red, smooth, and shining, and hard and painful to the touch. After two or three days more, a small speck of yellow matter appears on the apices of some of the tubercles; and when these afterwards break, a thinner humour is secreted, which soon dries into a yellowish scab. The inflammation now gradually declines, the size and hardness of the tubercles diminish, and the small scab becomes loosened at the edges, and at length falls off at about the end of the third week. The individual tubercles, which rise and suppurate in succession, pass through a similar course.

In the acne indurata, the tubercles are larger, as well as more indurated and permanent, than in the former variety. They rise often in considerable numbers, of a conical, or oblong coniform kind, and are occasionally so acuminate, as if tending to immediate suppuration, being at the same time of a bright roseate hue; yet many of them continue in a hard and elevated state for a great length of time, without any disposition to suppurate. Others, however, pass on very slowly to suppuration, the matter not being completely formed in them, for several weeks, and then only a small part of the tubercles are removed by that process. Sometimes two or three coalesce, forming a large irregular tubercle, which occasionally suppurates at the separate apices, and sometimes only at the largest. In whatever mode they proceed, the vivid hue of the tubercles gradually becomes more purple or even livid, especially in those in which there is no tendency to suppurate. Slight crusts form upon the suppurating tubercles, which after some time fall off, leaving small scars, surrounded by hard tumours of the same dark red colour; and these sometimes suppurate again at uncertain periods, and sometimes slowly subside and disappear, leaving a purple or livid discoloration, and occasionally a slight depression, which is long in wearing off.

The tubercles, even when they do not suppurate, but especially while they continue highly red, are always fore and tender to the touch; so that walking, shaving, the friction of the clothes, &c. are somewhat painful. In its most severe form, this eruption nearly covers the face, breast, shoulders, and top of the back, but does not descend lower than an ordinary tippet in drefs; yet this limitation of the disorder is independent of the exposure of those parts; for it occurs equally in men and women. In a few instances in young men, an extensive eruption of acne indurata has been seen affecting the covered parts, while the face remained nearly free from it. By the successive rise and progress of the tumours, the whole surface, within the limits just mentioned, was spotted with the red and livid tubercles, intermixed with the purple discolorations and depressions left by those which had subfided, and variegated with yellow suppurating points and small crusts, so that very little of the natural skin appeared. Sometimes the black puncta of the sebaceous ducts were likewise mixed with the vari and their sequelae.

Cure of Vari.—Vari being generally a local disease, the acne is to be treated chiefly by external applications. Except in females, indeed, this variety of the eruption seldom calls for the attention of medical men. The ancients agree in recommending a number of stimulant applications, with the view of discharging the “thick humours,” which were supposed to constitute the vari. Lotions and liniments, containing vinegar and honey, sometimes combined with an emulsion of bitter almonds, and sometimes with turpentine, resin, myrrh, and other gums, or with alum, soap, and Cimolian earth, or the bruised roots of the lily, cyclamen, narcisius, &c. were the substanies which they principally employed. They were doubletis correct as to the principle, as a gentle stimulus to the skin is the most safe and effectual remedy. The apprehensions, which have been strongly expressed by the humoral pathologists, of producing internal disorder by the sudden repulsion, as it has been called, of these cutaneous eruptions, are not altogether hypothetical. Head-ache, and affections of the stomach and bowels, have sometimes been thus produced, which have ceased on the reappearance of the eruption; but, on the whole, as far as our observation goes, this alternation of disease is less frequent and obvious in this form of acne, than in the pustular and crutofe eruptions of the face and head.

The stimulant applications, which are most easily proportioned to the irritability of the tubercles, are lotions containing alcohol, which may be reduced or strengthened, according to circumstances, by the addition of any distilled water. It is not easy to describe the appearances of the eruption, which indicate any certain degree of strength in the lotion; but a little observation will teach this discrimination. If the tubercles are considerably inflamed, and a great number of them pustular, a dilute mixture will be requisite; containing, for example, equal parts of spiritus tenuior and of rose or elder-flower water. The effect of a very acrid lotion, under such circumstances, is to multiply the pustules, to render many of them confluent, and to produce the formation of a crust of some extent, as well as to excite an inflammatory redness in the adjoining skin. A slight increas of the inflammation, indeed, is sometimes occasioned by the first applications of a weak stimulus; but this is of short duration, and the skin soon bears an augmentation of the stimulant; until at length the pure spirit is borne with advantage, as the inflammatory disposition subsides. Under the latter circumstances, even a considerable additional stimulus is often useful; such as from half a grain to a grain or more of the muriate of mercury, in each ounce of the spirit; or a drachm or more of the liquor potass, or of the muriatic acid, in fix ounces. Acetic acid, as recommended by the ancients, and the liquor ammoniac acetatis, afford also an agreeable stimulant, in proper proportions. Sulphur yields a small portion of its substanse to boiling water, poured upon it, and allowed to infuse for twelve or fourteen hours; a quart of water being added to about an ounce of broken sulphur. A lotion of this nature has been found advantageous in slight cases of acne simplex, and especially in removing the roughness and dulness of the face connected with it.

Connected with the eruption of vari, and often giving rise to them, is that appearance of black points in the skin of the face and neck, surrounded by a raised border of cuticle, to which the appellation of acne punctata was given.
by Dr. Willan. These are vulgarly considered as the extremities of small worms or grubs, because, when they are pressed out, a sort of worm-like appendage is found attached to them; but they are, in fact, only little plugs of concreted mucus or flaccidaceous matter, moulded in the small ducts of the cuticular glands into this verrucous form, the extremity of which is blackened by contact with the air. In consequence of this diffusion of their ducts, the glands themselves sometimes inflame, and form small tubercles, or vari, with the little black points upon their surface, which partially suppurate, as in the preceding specks; but many of them remain stationary for a long period, without ever passing into the inflammatory state. Not unfrequently they are intermixed with a few vari, in which the pun[ita] have not appeared.

These concretions may be extracted, by preening on both sides of the specks with the nails, until the hardened mucus is sufficiently elevated to be taken hold of. A blunt curved forceps may be employed with advantage for this purpose; and such a one has been contrived by a surgeon's instrument-maker in London. When the plugs are removed, the disorder becomes simple vari, and requires the treatment above-mentioned. The formation of these concretions, indeed, seems to be in a considerable degree prevented, by increasing the tone of the skin, both by the use of the stimulant lotions before recommended, and by friction, using always a strong rough towel.

The preceding varieties of the eruption of vari occur only in young persons, of either sex, from the period of puberty to the age of thirty or thirty-five, and principally in those of the languid temperament, and they are generally accompanied by good health, and are totally disconnected with any disorder, or with habits of intemperance; but there is another variety of this eruption, which does not occur till after the age of forty, which is always, except from strong hereditary taint, sympathetic of some disea[se] of the digestive organs, or vice versa connected with them, and which therefore is not so easily cured, and is not even benefited by the fame local means which are so efficacious in the former species. This variety of the disea[se] is the gutta ro[sea] of medical authors, and the acne ro[sea] of Dr. Willan.

This eruption of vari, indeed, differs in its appearance very essentially from the preceding species. In addition to the eruption of small suppuring tubercles, there is also a shining redness, and an irregular granulated appearance of the skin of that part of the face which is affected, which is not the part usually occupied by the former species. The redness commonly appears first at the end of the nose, and afterwards spreads from both sides of the nose to the cheeks; the whole of which, however, it very seldom covers. In the commencement the redness is not uniformly vivid; but is paler in the morning, and readily increased to an intense scarlet after dinner, or at any time if a glass of wine or spirits be taken; or if the patient be heated by exercise, or by sitting near a fire. After some continuance in this state, the texture of the cuticle becomes gradually thickened, and its surface uneven or granulated, and variegated by reticulations of enlarged cutaneous veins, with smaller red lines stretching across the cheeks, and sometimes by the intermixture of small suppuring vari, which succcessively arise on different parts of the face. Where there is a strong hereditary predisposition, or by the constant immoderate use of wine and spirituous liquors, this disea[se] may affect the greater part of the face, even the forehead and skin; but the nose especially, in such cases, becomes tumid, and of a fiery red colour: and, in advanced life, it sometimes enlarges to an immoderate size, the no[tril]s being distended and patulous, or the ale[se] fissured, as it were, and divided into separate lobes.

Little can be done in way of cure for this species of vari, the visceral or constitutional malady being the root of the disea[se]; against which, of course, the remedies, both moral and physical, must be directed.

Vari, in Zoology, a name given to the maucacoe, or lemur catta of Linnaeus, with his tail marked with rings of black and white; it is about the size of a cat, and inhabits Madagascar and the neighbouring iles. The vari of Buffon is the ruffled maucacoe of Pennant, the black maucacoe of Edwards, and lemur caudatus gigas, collari bartolo, of Linnaeus. It has orange-coloured irides; long hair round the sides of the head, standing out like a ruff; long tail; the colour wholly black, but sometimes white spotted with black; the feet black. It inhabits Madagascar; it is very fierce in a wild state; and makes so violent a noise in the woods, that the noise of two may be easily mistaken for that of a hundred: when tamed, gentle and good-natured. Pennant.

Varia, in Geography, a town of Hindoostan, in Concan; 25 miles N. of Goa.

VARIA, in Ancient Geography, a town of Hispania Citerior, on the Iberus, N.W. of Caralagiis.

VARIA, Vico-Varo, a town of Italy, in the Sabine territory, but belonging to the Latins; situated on the Valerian way; 8 miles from Tibur, and 27 from Rome. It was also called Valeria.

Varia, in Zoology, a name by which some authors have called the lepord, or pardalis, from the beautiful variegations with which it is marked.

VARIABLE, in Geometry and Analytics, is a term applied by mathematicians to such quantities as either increase or diminish, according as some other quantity either increases or diminishes.

Thus, the semigordians and abscifics of an ellipse, &c. are variable quantities; because, if the one increase, the others increase likewise. They are then called, in contradistinction to constant, or given, or stable quantities; which are always the same though others change; as the femidiameters of a circle, which remains the same, though the abscicfs and semidiameters increase.

Variable quantities are usually denoted by the last letters of the alphabet, x, y, z.

Some authors, instead of variable and constant quantities, use the terms fluent and stable quantities.

The infinitely small quantity by which a variable quantity is continually increasing or diminishing, is called the increment or decrement, or difference; and the velocity with which it increases or decreases at any given point, is called its fluxion; the calculation of which is the subject of the new methodus differentialis, or doctrine of fluxions.

VARIABLE Wind. See Wind.

VARIAM, in Geography, a town of Persia, in the province of Irak; 120 miles E. of Hamadan.

VARIANA, in Ancient Geography, a town of Lower Media, upon the route from Viminacium to Nicomedia, between Auguste and Varilana. Anton. Itin.

VARIANE, a town of Pannonia, upon the route from Emona to Sirium, between Sifca and Meneliance. Anton. Itin.

VARIANCE, Variantia, in Law, an alteration or change of condition in a person, or thing, after some former concern or transmigration therewith.

Thus,
Thus, if the commonalty of a town make a composition with a lord, and afterwards bailiffs be granted by the king to the same town, there, if the lord commence any suit for breach of the composition, he must vary from the word commonly, used in the composition, and use bailiffs and commonly.

**VARIANCE** is also used for an alteration of something formerly laid in a plea; or where the declaration in a cause differs from the writ, or from the deed upon which it is grounded.

**VARIATION of Quantities, in Algebra.** See Changes and Combination.

**VARIATION, in Astronomy.** The variation of the moon, called by Bullialdus the reflection of her light, is the third inequality observed in the moon’s motion; by which, when out of the quadratures, her true place differs from her place twice equated. See Place, Equation, &c.

Sir Isaac Newton takes the moon’s variation to arise partly from the form of her orbit, which is an ellipse; and partly from the inequality of the parts of space, which the moon describes in equal times, by a radius drawn to the earth.

To find the greatest variation, observe the moon’s longitude in the sextants; and, for the time of observation, compute the moon’s place twice equated: the difference between the computed and the observed place is the greatest variation.

Tycho makes the greatest variation 40° 30'; Kepler makes it 51° 49'; Sir Isaac Newton makes the greatest variation, at a mean distance, between the sun and the earth, to be 33° 10'; at the other distances, the greatest variation is in a ratio compounded of the duplicate ratio of the time of the moon’s synodical revolution directly, and the triplicate ratio of the distance of the sun from the earth inversely. And, therefore, in the sun’s apogee, the greatest variation is 33° 14', and in his perigee, 37° 11'; provided that the excentricity of the sun be to the tranversal semidiameter of the orbs magnus, as 1644 to 1000. Or, taking the mean motions of the moon from the sun, as they are tabulated in Dr. Halley’s tables, and the greatest variation at the mean distance of the earth from the sun will be 33° 7', in the apogee of the sun 33° 27', and in his perigee 30° 51'. Phil. Nat. Prin. Math. prop. 29. lib. iii. apud Horley’s Newtoni Opera, vol. iii. P. 71.

**VARIATION, in Geography, Navigation, &c.** A term applied to the deviation of the magnetic needle, or compass, from the true north point, towards either east or west; called also the declination.

The variation, or declination, of the needle, is properly defined, the angle which a magnetic needle, suspended at liberty, makes with the meridian line on a horizontal plane; or an arc of the horizon, comprehended between the true and the magnetic meridian.

In sea-language, the variation is usually called north-easting, or north-westing.

All magnetic bodies, we find, range themselves, in some degree, to the meridian; but it is rare that they fall in precisely with it: in one place they decline from the north to the east, and from the south to the west; and in another place, on the contrary, from the north to the west, and from the south to the east; and that too different at different times.

The variation of the compass could not be long a secret, after the invention of the compass itself: accordingly, Ferdinand, the son of Columbus, in his life written in Spanish, and printed in Italian at Venice in 1571, afferts, that his father observed it on the 14th of September, 1492: though others seem to attribute the discovery of it to Sebastian Cabot, a Venetian, employed in the service of our king Henry VII. about the year 1500. And as this variation differs in different places, Gonzales d’Oviedo found there was none at the Azores; whence some geographers have thought fit in their maps to make their first meridian pass through one of these islands; it not being then known that the variation altered in time. See Gilbert de Magnete, Lond. 1600, p. 4, 5; or Purchas’s Pilgrims, Lond. 1625, book ii. sect. 1. See Variation of the Magnet.

Variations are the hypotheses framed to account for this extraordinary phenomenon; of which we shall mention some of the later, and more probable, only premising, that Mr. Robert Norman, the inventor of the dipping-needle (which see), disputes against Cortes’s notion, that the variation was caused by a point in the heavens, contending that it should be sought for in the earth, and proposes how to discover its place.

The first is that of Gilbert (De Magnete, lib. iv. p. 151, &c.) which is followed by Cabeus, &c.

This notion is, that it is the earth, or land, that draws the needle out of its meridian direction; and hence they argue, that the needle varied more or less, as it was more or less distant from any great continent; consequently, that if it were placed in the middle of an ocean, equally distant from equal tracts of land on each side, eastward and westward, it would not decline either to the one or the other, but point justly north and south. Thus they say, in the Azores islands, which are equally distant from Africa on the east, and America on the west, there is, in effect, found no variation; but as from the Azores you fall towards Africa, the needle begins to decline from the north to the east; and that still more and more, till you reach the shore.

If you still proceed eastward, the declination gradually diminishes again, by reason of the land left behind on the west, which continues to draw the needle.

The fame holds till you arrive at a place where there are equal tracts of lands on each side; and there again there is no variation.

The observations of our mariners, in their first East India voyages, seemed to confirm this fyltem; as they proceed towards the Cape of Good Hope the variation is still eastward; at length arriving at the Cape de las Aguilas, q, d. of the Needles, the meridian line, then dividing Africa into two equal parts, there is no variation at all; but as they proceed farther, and leave the African coast on the west, the variation becomes westward.

But the misfortune is, the law does not hold universally; in effect, a great number of observations of the variations, in various parts, made and collected by Dr. Halley, overturn the whole theory.

Some, therefore, have recourse to the frame and compartments of the earth, considered as interwoven with rocks and shifles, which being generally found to run towards the poles, the needle has been observed to have a general tendency that way; but which seldom going perfectly in the direction of the meridian, the needle, of consequence, has commonly a variation.

Others hold various parts of the earth to have various degrees of the magnetic virtue, as some are more intermixed with heterogeneous matters, which prevent the free action or effect of it, than others.

Others ascribe all to magnetic rocks and iron mines, which, affording more of the magnetic matter than other parts, draw the needle more.

Lately, others imagine earthquakes, or high tides, to have disturbed and dislocated several considerable parts of the earth, and so changed the magnetic axis of the globe, which originally was the frame with the axis of the globe itself.
VARIATION.

But still, that great phenomenon, the variation of the variation, i.e. the continual change of the declination in one and the same place, which the modern observations daily confirm, is not accountable for on any of these foundations, nor even is it consistent with them.

Dr. Hooke communicated to the Royal Society, in 1674, a theory of the variation, the substance of which is, that the magnet has its peculiar pole distant ten degrees from the pole of the earth, about which it moves, so as to make a revolution in 370 years; whence the variation (he adds) hath altered of late about ten or eleven minutes every year, and will probably continue to do so for some time, till it begins to become flower and flower, and will at length be rational and retrograde, and in all probability may return. Birch's Hist. of the Royal Society, vol. iii. p. 131.

Dr. Halley, in the Philosophical Transactions, No. 148, invented a new theory, founded on a great number of observations, many of which were made expressly for the purpose by order of the government; but as they do not extend to a more recent date than about 1680, and as perpetual changes are going on in the variation of different places, the table of results of this learned philosopher is now of little use; we shall therefore avail ourselves of the history of these changes, as published in a recent work on the variation of the compass by W. Bain, master in the royal navy, which contains much important information on this subject, and is deserving of the particular attention of every one engaged in the management and navigation of vessels.

At London, in 1680, the quantity of variation was found to be $11^\circ15' E.$; in 1662, $6^\circ E.$; in 1634, $4^\circ5' E.$; and in 1637, the needle coincided with the true poles of the world; so that a period of 87 years elapsed in changing the $11^\circ15'$ of easterly variation in that city to zero, or until the variation began to take a westerly direction. In 1672, the variation was $2^\circ30' W.$; in 1723, $14^\circ17' W.$; in 1747, $17^\circ40' W.$; in 1780, $22^\circ41' W.$; and in 1793, $23^\circ56' W.$; after which years the variation was zero, it was nearly $24^\circ10' W.$ and it is still nearly the same.

At Paris, in 1530, the variation was $8^\circ E.$; and in 1660, the needle pointed to the true poles of the world; in 1681, the variation was $2^\circ2' W.$; in 1760, $18^\circ20' W.$; in 1804, $22^\circ20' W.$. Hence it follows, that whilst the variation was undergoing an annual change of $10^\circ4'$ during a period of 213 years in London, the yearly change at Paris during a term of 254 years was only $7^\circ10' W.$.

At Dublin, in 1657, the needle coincided with the true poles of the world; and in 1791, the variation was $27^\circ23' W.$; exceeding the variation observed at London by $3^\circ$ or $4^\circ$; and, consequently, the annual change during 134 years, must have been about $12^\circ10' W.$.

While the variation was undergoing this change at London, Paris, and Dublin; we find very nearly a corresponding change at Cape Aguilas, and at the Cape of Good Hope.

At the former of these places there was no variation in 1600, and in 1692, it amounted to $11^\circ W.$; and at the Cape of Good Hope, in 1700, the variation was nearly $10^\circ W.$; and in 1791, it had increased to $24^\circ31'52'' W.$; so that during a period of 91 years, the annual change in the variation at the latter place, must have been about $9^\circ15' W.$.

At St. Helena, the variation in 1600 was $8^\circ E.$; in 1692, $1^\circ W.$; in 1776, $13^\circ15' W.$; and in 1794, it was found to be $16^\circ16' W.$; consequently, the mean annual change in the variation at this place, during a period of 194 years, has been at the rate of $7^\circ52'$.

At Cape Comorin, in 1620, the variation was $14^\circ20' W.$; in 1688, $5^\circ30' W.$; in 1736, $6^\circ15' W.$; and in 1816, there was still no variation at this place; therefore, during a period of 137 years, the mean annual change was $6^\circ15'$; but this includes a term of 60 years, in which there appears to have been a very small change in the declination, viz. about $15'$ annually.

The phenomena presented by the variation at Cape Horn and its vicinity, are extremely different from those observed at the Cape of Good Hope, Paris, and London.

In 1683, in S. lat. $57^\circ27' W.$; long. $57^\circ28' W.$, the variation was found to be $23^\circ10' E.$; in 1773, in S. lat. $56^\circ27' W.$; long. $54^\circ W.$, the variation was $24^\circ25' E.$; in 1786, in S. lat. $53^\circ W.$; long. $70^\circ W.$, the variation was $22^\circ47' E.$; and in 1793, in S. lat. $57^\circ W.$; long. $67^\circ W.$, the variation was exactly $23^\circ E.$ Hence it follows, that during a period of 112 years, the variation near Cape Horn has neither increased nor diminished in a perceptible manner.

At Cambridge, in Massachusetts, in 1708, the variation was found to be $9^\circ W.$; and since that period, it has been diminishing at the rate of $12''$ annually; whilst at Jamaica, Barbadoes, and Lima, the variation has undergone no change during a period of 140 years.

In the northern hemisphere, in the parallel of Spitzbergen, Davis's Straits, Hudson's Bay, &c. the same quantity of variation appears to have existed during the space of 150 years. The quantity or variation from Cape Comorin saltwater, towards Nicobar islands, Java, Ceram, Ambon, Timor, &c. is so very small, as to seldom induce navigators to advert to it in their calculations; and is subject to little or no change. It may, however, be worthy of remark, that 60 miles east from the coast of Coromandel, about the meridian of Madras, the variation changes from east to west; and the same local changes probably take place on the coasts of Chile, Peru, and Mexico.

In 1704, from Valparayfo to Acapulco, a distance of 50° of latitude, the variation was very inconsiderable; for, from the former of these places to Lima, it never exceeds $5^\circ E.$; and from Lima to the latter place, never more than $4^\circ W.$.

The greatest variation that the author, from whom the preceding abstract has been made, is acquainted with, is that which has been observed between Cape Farewell and Labrador, in Hudson's Straits and Baffin's Bay. In N. lat. $52^\circ W.$; long. $52^\circ$ W., it was found by the author above alluded to, to be $40^\circ10'53'' W.$; and as high as N. lat. $66^\circ$, in about the same longitude, it was found to be $50^\circ$ or $52^\circ$; but he expresses some doubt whether this great excess of variation might not have been partially produced by the effects of local attraction.

In 1616, in N. lat. $78^\circ W.$; long. $80^\circ$ (Baffin's Bay), the variation was found to be $57^\circ W.$; and in 1775, N. lat. $62^\circ W.$; long. $65^\circ W.$, the variation was $41^\circ W.$; and in the same year, in N. lat. $65^\circ W.$; long. $79^\circ$, the variation was $45^\circ W.$; and in all these high latitudes, the variation still continues nearly the same.

On the west side of America, in the same parallel of latitude as Davis's Straits, Cape Farewell, &c. we perceive the variation assuming another character, and seldom exceeding half the quantity found at the above-mentioned places.

In 1786, in N. lat. $53^\circ W.$; long. $145^\circ21'$ from Paris, the variation was from $23^\circ$ to $24^\circ E.$; in the same year, in N. lat. $58^\circ$, W. long. $138^\circ$, it was $25^\circ E.$; and in Port des Francois, in N. lat. $58^\circ37'$. W. long. $137^\circ30'$, the variation, as ascertained by the meridional line, amounted to $27^\circ E.$ In 1793, in N. lat. $53^\circ W.$; long. $129^\circ$, the variation was only $20^\circ41' E.$; and in 1794, in N. lat. $61^\circ17'$. W. long. $149^\circ7'29''$; easterly variation was found the greatest quantity observed by Vancouver while on that coast.
VARIATION.

But of all the places on the globe with which we are acquainted, none exhibit such wonderful phenomena in the variation as the coasts of China, Corea, Tartary, Japan, and Kamtschatka northward.

In 1787, from Macao to N. lat. 41°. E. long. 136° from Paris, the quantity of westerly variation never exceeded 2°; and from this last point to N. lat. 51°. E. long. 142°. where the variation was only 53° E., the quantity never exceeded 3°.

In 1804, in N. lat. 52°. E. long. 143° from Paris, there was no variation; 10° farther to the E., and 4° to the S., the change was 11° and 11° 45'; secondly, in the Ethiopian sea, from 5° N., to 20° or 25° S. lat., and from 10° to 15° or 20° E. long., the change in the variation was about 10°; and thirdly, at 50° N. lat., and between 15° E. and 10° W. long., the change was nearly 11°. In these different places, the variation has since continued to increase at nearly the same rate.

During the same interval it was also ascertained, that there were four places or points on the globe where the variation has undergone no change.

These were, first, from the eastern point of Africa to the farthest of the Bermudas; secondly, the environs of the Ile of Madagascar and part of the Zanquetar: thirdly, that part of the ocean which is to the S. and E. of the Sunda islands, between them and New Holland; and fourthly, in the same sea, about 4° S. lat., and 97° E. long., that is, in the middle of the space comprised between the western angle of New Holland and the southern point of Africa. In all these places, the variation did not vary perceptibly during 56 years. And it may be remarked, that observations made since the above period, have not shewn any change worthy of notice in its quantity at the above-mentioned places.

Some intelligent sea-officers are of opinion, that in the western part of the English Channel, the westerly variation has begun to decline, whilst others assert, that the variation is still increasing in the Channel, and as far westward as W. long. 15°, in N. lat. 51°, at which place they say the variation amounts to 30° W. Neither of these opinions, however, can, according to Mr. Bain, be relied on as correct, though each may have been deduced from observation. If the head of the ship is on the east point of the compass at the time of observation, from 20° to 25° of variation will be observed; but on the other hand, if the ship's head is at the west point at the time, the observed variation will amount to 30° or 33°.

The circumstance above alluded to, of the apparent variation being so much influenced by the local attraction of the ship, is certainly of the highest importance; and the means which Mr. Bain has adopted of making it generally known are highly laudable; at the same time, we cannot but feel considerable doubt, after this fact is once pointed out, of the accuracy of many of the observations stated in the preceding pages, as several of these were made by persons wholly unconscious of such an influence, which seems to have been entirely unknown till Mr. Wales, the astronomer, who failed with Capt. Cook, first noticed the phenomenon; and his observations have been since confirmed by Capt. Flinders; and Mr. Bain, in the work we have above alluded to, has added many additional facts to those before known, and to which we shall have again occasion to refer; but in the first place, it will be proper to infer a general table of variations in different latitudes, as given in the Philosophical Transactions for 1757, with additional observations of the above author.

It may not be amiss to add here, as belonging to the history of this subject, that we owe the first variation chart to Dr. Halley. Previously to this period he had collected, and made, a multitude of observations on the variation of the needle in many parts of the world, and was enabled to draw on a Mercator's chart, lines showing the variation of the compasses in the places through which they passed. But as the deviation of the magnetic meridian from the true one was then, as now, subject to continual alteration, this chart was soon found useless.

However, in 1744, Mountain and Dobfon published a new variation chart, adapted to that year; which being well received, they published a second, adapted to 1755; and a third in the following year: the last we know of.

Nicholson strongly recommends the employment of the variation as a means of finding the longitude at sea; but navigators are long since convinced of its inadequacy. Vancouver, speaking of this subject, says, "This very able seaman, Nicholson, still wedged to formerly-adopted opinions, strongly recommends the variation of the compass as a mean for ascertaining the longitude at sea; yet, had we been no better provided, we might have searched for the Cape of Good Hope, agreeable to his propositions, to little effect; for when we were in lat. 35° 7' S., with 20° 16' W. variation, we had only reached the long. of 60° 30' W.; and again, when in lat. 35° 22' S., with 22° 7' W. variation, we had only advanced to the long. of 110° 25', instead of being, according to Mr. Nicholson's hypothesis, in the first instance, nearly under the meridian of the Cape of Good Hope, and in the second, under that of Cape Aguilas; and it was not until we had nearly 26° W. variation, that we approached the meridian of the Cape of Good Hope. The observations for the variation were made with the greatest care and attention; and though generally considered as correct, they differed from one to three, and sometimes to four degrees; not only when made by different compasses, placed in different situations on board, and the ships on different tack, but by the same compasses in the same situation, and at moderate intervals of time; the difference in the results of such observations, at the same time, not preferring the least degree of uniformity. Hence the alteration amounts nearly to an absurdity, which states, that with 20° to 20° 10', or 20° 30' westerly variation, you will be certain of such and such longitudes; and it is greatly to be feared, that navigators who rely on such means for ascertaining their situation in the ocean, will render themselves liable to errors that may be attended with the most fatal consequences."

A Table
# VARIATION.

A Table exhibiting the Changes of Variation from the Year 1700, in the most frequented Seas.

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<th>Lat.</th>
<th>Long.</th>
<th>Year</th>
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VARIATION.

Of the Curve of No Variation.—In the preceding part of this article, we have principally alluded to the variation east or west, at different times and in different places; but it is no less interesting to trace the curve in which no variation is observed. We have seen, that there are certain points in the northern and southern hemispheres where the needle points to the true poles of the world; these points, however, are not all situated on the same meridian, but form an irregular curve, inflected different ways, and in perpetual motion.

In the northern hemisphere, a curve of no variation moved from west to east during two centuries prior to 1662. This curve first passed the Azores, then the meridian of London, and, after a certain number of years, the meridian of Paris. But in the southern hemisphere, there was another curve of no variation moving from east to west. This curve first passed Cape Aguilas, and then the Cape of Good Hope; the westerly variation following the easterly, the same as in the northern hemisphere, but in a contrary direction.

And from the observations that have since been made, it appears that the curve of no variation in the northern hemisphere, after passing the meridian of London and Paris, has discontinued its easterly progress; while the curve of no variation in the southern hemisphere, still continues its course north-westward.

The variation on the east side of the curve of no variation, which passed the meridian of Aguilas in 1600, and extended north and south to a high degree of latitude in both hemispheres, being westerly; and the curve which passed the meridian of London in 1662 being easterly; it follows, that the curve which passed London could not reach beyond the 18th degree of east longitude, as the denomination of the variation was the same easterly of that meridian in 1600 that it now is, namely, westerly. The exact point where the southern curve of no variation passed the northern curve cannot be satisfactorily ascertained; but it is known, that while the northern curve passed London eastward, the southern curve passed westward in nearly the same longitude.

Dampier, in his voyage to the East Indies in 1669, found, that from 6° south latitude and 25° west longitude, to the point where the 37th degree of south latitude was intersected by the meridian of Greenwich, the variation was easterly, but never exceeding 13°; at which latter point the easterly variation was 0°, and thence became westerly, and continued to increase to 49° E. long., and 25° S. lat., where it appears to have attained its maximum; i.e. 25° or 26° W.; and from this point the variation gradually diminished, till it again assumed another denomination in S. lat. 10°, and E. long. 125°; and from this point, the lat. point, as far north of the equator as 10°, the variation appears to have then been, as it still is, influenced by local attractions; the quantity being always small, sometimes east, and at others west.

Captain Cook, in 1772, in S. lat. 6°, and W. long. 16°, found 6° 30' westerly variation; and in S. lat. 24°, and W. long. 23° 51', found only 30' westerly variation. From this point the westerly variation gradually increased, as the southern latitude and eastern longitude augmented to 96° of east longitude, and 60° 49' south latitude, where it attained its maximum; i.e. 43° 45' west. From this latter point it rapidly decreased, and became east in S. lat. 58° 53', and E. long. 143° 40'. But as the tract of D'Entrecaults, in 1791, nearly coincides with Dampier's in 1669, the change in the position of the curve of no variation, will be illustrated by a comparison of their respective observations.

D'Entrecaults found the variation in S. lat. 6°, and W. long. 25°, to be 7° 15' west; and in S. lat. 25°, and W. long. 25°, only 1° 56' west; from which last point it again increased as the west longitude diminished, till the meridian of Greenwich intersected the 33rd degree of south latitude, where the variation was 15° west; and it attained its maximum of 30° 48° 9' in S. lat. 34° 54', and E. long. 38° 14' 18" from Paris; and from hence, to S. lat. 44°, and W. long. 133°, the variation continued westerly, but it thence changed and became east.

The space between the two curves observed by Dampier in 1669, reached from the meridian of Greenwich to 130° E. long.; and the distance between them, according to D'Entrecaults, in 1791, must be 155°. Dampier having cut the curve in 80° E. long., and the other in 25° W. The curve of no variation must therefore have advanced from the westward annually about 1°, in the parallel of 34° south latitude, to have shifted its place 25° in ninety-two years, and at a yearly rate of 14' 80' from the time it passed Cape Aguilas in 1660 to 1791. This curve is now known to extend across the magnetic and terrestrial equators, to a point in N. lat. 37° 27' and W. long. 76° 44'.

From a comparison of the above results, and others drawn from the observations of captain Flinders, and the Russian navigator Krufenstern, it appears, that a curve of no variation bending westward, extends from the highest degree of southern latitude, in about 144° E. long. to 52° N. lat.; the curve parallel, intersecting the equator in 150° E. long. Now from the observations of La Perouse and Krufenstern, the westerly variation ceased, and the curve of no variation terminated in about 52° N. lat., and 143° E. long.; for the variation north-eaft of this point assumes another character; and 18° farther north, and 52° to the east, captain Cook found near 56° of easterly variation.

It appears also, from a comparison of observations made in Peria and the frontiers of China by Schubert, with those of Peroue, Krufenstern, and others, made on board his majesty's ship Sybille, that the curve of no variation again takes its rite in about 52° N. lat., and 143° E. long., and terminates a little east from Spitzbergen, extending in a direction nearly east by south, and west by north, through 67°80 miles of longitude.

Biott, in speaking of this subject, says, "that a curve of no variation seems to take its rite in the great Southern ocean, passing through the western part of New Holland, traverses the Indian ocean, enters the continent of Asia at Cape Corom, and thence passes through Persia and West Siberia, and proceeds towards Lapland. But what is more remarkable, that line divides itself into two in the great Asian archipelago, and gives rite to another branch, which, pointing directly from the south to the north, passes that archipelago, traverses China, and is again found in Eastern Siberia. The existence of this branch, and its separation from the former, are clearly indicated by the observations made in the Chinese seas; but I am able to offer a still further confirmation of it, by the observations made in Ruffia and the frontiers of China, by the celebrated astronomer Schubert, who has been kind enough to communicate them to me;" which latter are the observations spoken of above.

We have seen that a curve of no variation, extending from 60° of south latitude to 52° of north latitude, in about 143° east longitude, but taking a small head to the westward, is intersected by the meridian of Ambouyn; and by comparing with each other different observations made by Mr. Wales, in his voyage with captain Cook, and those of Vancouver in 1791, and others made by Mr. Home Popham, and by Humboldt, it appears, that from the weftly part of the curve of no variation, found in about 130° eall of the meridian of Greenwich, where the weftly changes to an easterly variation, to the meridian where the easterly variation...
tion was found to terminate by captain Cook. S. lat. 58°
27'. W. long. 13° 10', the distance east and west will be
216° 50'.

To the meridian of Peru, S. lat. 20° 39'. W. long.
28° 36', the distance is 201° 22'.

To the meridian of Vancouver, S. lat. 35°. W. long. 28°,
the distance is 202°.

To the meridian of sir H. Popham, S. lat. 30°. W. long.
26°, the distance is 204°.

To the meridian of Humboldt, N. lat. 13°. W. long. 59°,
the distance (taking the mean) is 171°.

And if the curve of no variation extends to N. lat. 37°
27'. W. long. 70° 40', the easterly variation in that parallel
will only measure 15° 16'.

These different distances point out, under different paral-
lels of latitude, the direction which the curve of no variation
at present affirms; and we may perhaps conclude, that the
variation of the magnetic needle is caused by two different and
distinct systems of magnetic forces; the one producing a
weasterly variation in the northern hemisphere, over the space
of 200° 44'; and in the southern hemisphere, in the same
parallel of latitude, of 143° 10'; and the other an easterly
variation in the northern hemisphere, over a space of 159°
16'; and on the southern, of 216° 50'.

From these facts it would seem, that the north end of the
curve, which passed Cape Aguilas in 1600 north-westward,
was in 1804 found to extend from S. lat. 60°. W. long. 15°
10', to N. lat. 57° 27'. W. long. 70° 40', intersecting the 13th
degree of northern latitude, and the 21st, 30th, and 35th of southern
latitude; whence the medium rate of its motion is found
about 26° annually; but it is extremely probable, that the
south end of this curve has during the same period remained
stationary; and this difference in the motion of the two ex-
tremes of the curve in the southern hemisphere, may perhaps
point out to us the reason why the quantity of variation
should have continued the same off Cape Horn during 133
years, while at the Cape of Good Hope, Paris, and London,
it should have increased 25° or 27° in the same period.

The curve of no variation which passed through London
eastward, about the same time the curve in the southern
hemisphere passed the meridian of Greenwich westward,
appears to have been lost among the smaller magnetic powers
at present found in the continent of Europe and Asia.

The view which we have given of this perplexing subject,
deduced from actual observation, renders it obvious that all
trials, by theory, to fix on charts the exact positions of the
curves of no variation, or lines of given variation, must prove,
as they have always hitherto done, entirely abortive. There
are indeed places in the world, such as Spitzbergen, Cape
Horn, Chili, and Mexico, the great Alpin archipelago, the
cost of Coromandel, Peru, Brazil, &c., where the curve of
variation, and the variation itself, has not undergone any perceptible
change since first observed; but we have good rea-
sons to believe, that at all the above-mentioned places the
variations are regulated by incidential magnetic attractions,
which are lost or merged in the two great powers already
debated, at a little distance from their respective spheres.
In all other places of the globe, it is continually undergoing
a regular and progressive change; but it is impossible ac-
curately to determine when this change may cease, or to foresee
what quantity our present westward variation may attain,
though there is some reason to believe it has very nearly or
entirely arrived at its maximum.

At present, we have spoken only of those great and in
some measure continued changes in the variation which takes
place, and become very obvious after a long period; but
there are others of a more minute quantity, and of daily,
and we might add of hourly occurrence, to which it will be
proper to refer in the present article.

Mr. George Graham made several observations of this
kind in the years 1722 and 1723, professing himself alto-
gether ignorant of the cause of the variation which he ob-
erved. Phil. Trans. N. 385, or Abr. vol. vii. p. 290, &c.

About the year 1750, Mr. Wargentin, secretary of the
Royal Academy of Sciences in Sweden, took notice both of
the regular diurnal variation of the needle, and also of its
being disturbed at the time of the aurora borealis, as record-
ed in the Phil. Trans. vol. xlvii. p. 126, &c.

About the year 1756, Mr. Canton commenced a series of
observations, amounting to nearly 4000, with an excellent
variation-compas, of about nine inches diameter. The
number of days on which these observations were made was 605,
and the diurnal variation on 574 of them was regular; i.e.,
the absolute variation of the needle westward was increasing
from about eight or nine o'clock in the morning till about
one or two in the afternoon, when the needle became sta-
tionary for some time; after that, the absolute variation
westward was decreasing, and the needle came back again
to its former situation, or near it, in the night, or by the
next morning. The diurnal variation is regular when the
needle moves slowly eastward in the latter part of the mor-
ing, or westward in the latter part of the afternoon; also
when it moves much either way after night, or suddenly both
ways in a short time. These irregularities seldom happen
more than once or twice in a month, and are always accom-
panied, as far as Mr. Canton observed, with an aurora
borealis.

Mr. Canton lays down and evinces by experiment the fol-
lowing principle, viz. that the attractive power of the mag-
net (whether natural or artificial) will decrease while the
magnet is heating, and increase while it is cooling. He then
proceeds to account for both the regular and irregular vari-
ations. It is evident, he says, that the magnetic parts of the
earth in the north on the east side, and the magnetic parts of
the earth in the north on the west side of the magnetic meri-
dian, equally attract the north end of the needle. If then
the easterly magnetic parts are heated faster by the sun in
the morning than the western, the needle will move westward,
and the absolute variation will increase: when the attracting
parts of the earth on each side of the magnetic meridian have
their heat increasing equally, the needle will be stationary,
and the absolute variation will then be greatest, but when the
western magnetic parts are either heating faster, or cool-
ing slower than the easterly, the needle will move eastward,
or the absolute variation will decrease; and when the easterly
and western magnetic parts are cooling equally, the needle
will again be stationary, and the absolute variation will then
be least.

By this theory, the diurnal variation in the summer ought
to exceed that in winter; and accordingly it is found by ob-
ervation, that the diurnal variation in the months of June
and July is almost double that of December and January.

The irregular diurnal variation must arise from some other
cause than that of heat communicated by the sun; and here
Mr. Canton had recourse to subterranean heat, which is gen-
erated without any regularity as to time, and which will,
when it happens in the north, affect the attractive power of
the magnetic parts of the earth on the north end of the
needle. That the air near the earth will be much warmed
by the heat of it, is obvious; and this has been frequently
noted, that of in the morning, before day, by means of
thermometers at different distances from the ground. Phil.

Mr. Canton has annexed to his paper on this subject a
complete
complete year's observation; from which it appears that the
durnal variation increases from January to June, and
decreases from June to December. Phil. Trans. vol. i.
p. 398, &c.

It has also been observed, that different needles, especially
if touched with different loadstones, will differ a few min-
utes in their variation. See Poleni Epit. Phil. Trans.
N° 421.

We shall here subjoin a method practised by M. Du Hamel,
who was one of those who attempted, and succeeded in
the preparation of artificial magnets, for enlarging the scale of
the variation. At each extremity of the needle, composed
of two magnetic bars, and which is fourteen inches long, a
slender pointed piece of steel is erected perpendicularly; and
at the distance of fifty-two feet, in the direction of the
needle, he has placed on two pillars, and in a line perpendi-
cular to that direction, a graduated limb fix feet long; being
a segment of a superseded circle, described from the centre
on which the needle turns. The observer, placing himself so
as to bring the two pieces of steel at the extremities of the
bar into a line with the eye, observes where that line
prolonged, or the visual ray, points to the graduated arc. As,
at this distance, each of these degrees measures a foot, the
true direction of the needle is ascertained with the greatest
precision; and left the observer's eye may not be good
enough to enable him to see distinctly the particular divisions
at that distance, an assistant occasionally moves a certain
index, conformably to his direction. Hift. de l’Acad.

On the Effect of the Local Attraction of the Ship upon the
Variation of the Needle.—We have already had occasion to
notice the necessity of attending to the direction of the ship's
head, in observations made on ship-board relative to the
direction of the compass; and that this may have a very
favourable effect will appear very obvious, when we recollect
the quantity of iron with which a ship of war, in particular,
is generally loaded; and that this is mostly forward, while the
compass is generally aft. The great attraction between the
iron and the needle is generally known; and consequently,
if we could imagine the magnetic power of the earth to
cease entirely, we should have no difficulty in conceiving
that the attraction of the guns, &c. would incline the needle
towards the direction of that of the vessel; and consequently,
when the magnetic meridian and the direction of
the ship's head are the same, that is, when the vessel
lies north and south, both forces acting in the same manner, the
position of the needle will be the same as if no local
attraction existed. But if the ship's head is put over to
the east or west, then the local attraction of the ship will
incline the needle to the east and west, and consequently
will draw it towards the north; and it will, therefore,
assume a direction which corresponds with the
resultant of these two distinct forces; and we may observe,
that the direction of this resultant would furnish, if well
observed, most important data towards determining the inten-
sity of this mysterious power.

Simple and obvious as this idea is, it does not appear to
have been formed till Mr. Wales, the astronomer in captain
Cook's voyages, was struck with certain irregularities,
which he could in no way account for, and of which we
have the following account in the Introduction to the
astronomical observations in the Second Voyage.

'In the English Channel, the extremes of the observed
variation were from 148° to 25°; and all the way to
the Cape of Good Hope, I had frequently observed differences
nearly as great, without being able in any way to account
for them; the difference in the situation being by no means
sufficient. These irregularities continued after leaving the
Cape, which at length put me upon examining into the cir-
cumstances under which they were made. In this examina-
tion it soon appeared, that when most of these observations
were made, wherein the greatest variation had happened,
the ship's head was north and easterly; and that when
the ship had been taken, it was south and westerly. I mentioned this to captain Cook, and some of
the officers, who did not at first seem to think much of it;
but as opportunities happened, some observations were
made under those circumstances, and very much contributed
to confirm my suspicions; and throughout the whole voyage,
I had good reason to believe that observations varied,
with the ship's head in different positions, and even in different parts
of her, will differ very materially from one another, and
much more will observations made on board different ships,
which I now find fully verified, on comparing those made on
board the Adventure with my own, made about the same
time in the Resolution.'

Mr. Wales again recurs to this subject, in the course of
his astronomical observations made in Cook's third voyage,
and points out the quantity of the deviation in several cases;
yet the true cause of these anomalies does not appear to have
furnished itself to this able astronomer: he merely states the
results, but offers no explanation of them. Nor does it appear
that they were afterwards particularly noticed by any
navigator, till captain Flanders's attention was called to the
subject in the early part of his last voyage. Here that experienced
navigator found such unaccountable differences in the quantity
of variation, deduced from the different observations he
occasionally made, that he determined on instituting an
inquiry into their causes; and, if possible, to ascertain the
laws by which they were regulated.

"Several instances," he observes, "have been mentioned
in the course of this voyage, where the compass shewed a
different variation, on being removed from one part of the
ship to another. Thus, observations on the binnacle gave
29° off the Start, where the true variation was 25½°;
whilst others taken from the booms before the main-mast,
68 miles lower down the Channel, gave only 24°; and in
the experiments made with five compasses, the mean variation
on the binnacle was 4° 37', greater than on the booms.

"It soon became evident, however, that keeping the
compass to one spot was not alone sufficient to secure accu-
racny: a change in the direction of the ship's head was also
found to make a difference in the needle; and it was neces-
sary to ascertain the nature and proportional quantity of this
difference, before a remedy could be applied. This inquiry
was attended with many difficulties, and no satisfactory
conclusion could be drawn, until a greater variety of obser-
ations was collected. It then appeared, that whereas
the ship's head was on the east side of the meridian, the
differences were molly one way; and when on the west side,
they were the contrary: whence I judged that the iron in the
ship had an attraction on the needle, which drew it forward.
But there was this remarkable direction: in the northern
hemisphere, it was the north end of the needle which was
attracted; and in the southern hemisphere, it was the south
end. In the instances off the Start, before cited, when
the ship's head was westerly, the north end of the needle
drew forward; or to the left of the north, nearly 4°; and
the west variation thereby increased to 29½°; with the head
at easterly, it would be drawn to the right of its natural position.
and the variation diminished to about 21½°; but at north,
the attraction of the ship was in the same line with the mag-
netic poles of the earth, and would, therefore, produce no
change.
change. The same thing took place at south, for the two attractions were still in the same continued line, though on opposite sides of the compass; and throughout the voyage, I found the variation, taken with the head at north and south, agreed very nearly in themselves, and with the observations themselves near the same place, when such observations were not affected by local attractions."

The following table contains a few of the instances, where the change in the variation was observed by Captain Flinders.

**Table of Variations observed in a Voyage of Discovery to Terra Australis, in 1801 and 1802, by Captain Flinders, in His Majesty's Ship Investigator.**

<table>
<thead>
<tr>
<th>Time</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Ship's-Head</th>
<th>Variation</th>
<th>Difference</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td>49'50&quot; N.</td>
<td>5°52' W.</td>
<td>West</td>
<td>29°34' W.</td>
<td>29°30'</td>
<td>Off the Start.</td>
</tr>
<tr>
<td>49'48&quot;</td>
<td>46°50'</td>
<td></td>
<td>S.E. by S.</td>
<td>12°18'</td>
<td></td>
<td>Off the African</td>
</tr>
<tr>
<td>5°38&quot;</td>
<td>14°15'</td>
<td></td>
<td>W.S.W.</td>
<td>14°54'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2°21&quot;</td>
<td>7°50'</td>
<td>5°50' W.</td>
<td>E. by S.</td>
<td>5°11'</td>
<td>0°50'</td>
<td>Encounter Bay.</td>
</tr>
<tr>
<td>35°48°</td>
<td>139°3 E.</td>
<td></td>
<td>S.E.</td>
<td>0°25'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35°49°</td>
<td>139°12'</td>
<td></td>
<td>S.S.E. ½ E.</td>
<td>0°8'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36°43°</td>
<td>139°50'</td>
<td></td>
<td>South.</td>
<td>0°2'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37°30°</td>
<td>139°40'</td>
<td></td>
<td>E. by S.</td>
<td>2°39'</td>
<td></td>
<td>Off Cape Buffon.</td>
</tr>
<tr>
<td>37°50°</td>
<td>139°41'</td>
<td></td>
<td>S.S.E.</td>
<td>2°2'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37°56°</td>
<td>139°41'</td>
<td></td>
<td>N.E.</td>
<td>2°2'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37°55°</td>
<td>139°48'</td>
<td></td>
<td>W.S.W.</td>
<td>11°52'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39°38°</td>
<td>144°40'</td>
<td></td>
<td>South.</td>
<td>7°59'</td>
<td>3°50'</td>
<td>Baffs Straits.</td>
</tr>
<tr>
<td>39°38°</td>
<td>144°1'</td>
<td></td>
<td>N.E. by E. ½ E.</td>
<td>3°41'</td>
<td>3°7'</td>
<td></td>
</tr>
<tr>
<td>39°38°</td>
<td>144°30'</td>
<td></td>
<td>N.N.E. ½ E.</td>
<td>6°48'</td>
<td>1°16'</td>
<td>At anchor in Goofe Bay.</td>
</tr>
<tr>
<td>34°5</td>
<td>132°9</td>
<td></td>
<td>W.S.W.</td>
<td>1°10'</td>
<td>4°28'</td>
<td>Off Point Pearce.</td>
</tr>
<tr>
<td>34°4</td>
<td>132°10</td>
<td></td>
<td>East.</td>
<td>1°33'</td>
<td>5°28'</td>
<td></td>
</tr>
<tr>
<td>34°5</td>
<td>132°9</td>
<td></td>
<td>S.E.</td>
<td>3°56'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34°6</td>
<td>132°9</td>
<td></td>
<td>S.W. by W.</td>
<td>4°48'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34°7</td>
<td>132°19'</td>
<td></td>
<td>S.W. by S.</td>
<td>0°10'</td>
<td>4°48'</td>
<td>Off Point Pearce.</td>
</tr>
<tr>
<td>34°16</td>
<td>132°16'</td>
<td></td>
<td>E. by N.</td>
<td>0°35'</td>
<td>4°20'</td>
<td></td>
</tr>
<tr>
<td>34°22</td>
<td>132°21'</td>
<td></td>
<td>S.S.W.</td>
<td>3°15'</td>
<td>4°50'</td>
<td>At anchor off S. Vincent.</td>
</tr>
<tr>
<td>34°42</td>
<td>132°14'</td>
<td></td>
<td>S. by W.</td>
<td>5°22'</td>
<td>4°49'</td>
<td>Off South Cape.</td>
</tr>
<tr>
<td>34°36</td>
<td>132°18'</td>
<td></td>
<td>S.E.</td>
<td>2°27'</td>
<td>4°49'</td>
<td></td>
</tr>
<tr>
<td>32°40</td>
<td>132°0</td>
<td></td>
<td>E. by N.</td>
<td>7°25'</td>
<td>4°26'</td>
<td></td>
</tr>
<tr>
<td>32°30</td>
<td>125°25'</td>
<td></td>
<td>South.</td>
<td>4°57'</td>
<td>4°57'</td>
<td></td>
</tr>
<tr>
<td>32°32</td>
<td>125°40'</td>
<td></td>
<td>N.E.</td>
<td>6°13'</td>
<td>1°55'</td>
<td></td>
</tr>
<tr>
<td>32°24</td>
<td>125°55'</td>
<td></td>
<td>S. by E.</td>
<td>4°18'</td>
<td>3°56'</td>
<td></td>
</tr>
<tr>
<td>32°7</td>
<td>126°23'</td>
<td></td>
<td>E. by N.</td>
<td>6°4'</td>
<td>2°56'</td>
<td></td>
</tr>
<tr>
<td>32°17</td>
<td>128°2</td>
<td></td>
<td>S. by E.</td>
<td>3°8'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32°15</td>
<td>128°2</td>
<td></td>
<td>E. by N.</td>
<td>2°49'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32°23</td>
<td>132°30'</td>
<td></td>
<td>S. ½ W.</td>
<td>0°19'</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

After various other observations, and much examination, (for the needle was not always deflected the same quantity, when the position of the ship was the same,) captain Flinders found that the errors had a close connection with the dip. When the north end of the needle had dipped, it was the north point of the compass that had been attracted by the iron of the ship; and that dip diminished, so had the attraction, until at the magnetic equator; where the dipping-needle stands horizontal, there seemed to have been no attraction; and, upon the whole, it seemed probable that the error produced at any direction of the ship's head would be to the error at east or west, at the same dip, as the sine of the angle between the ship's head and the magnetic meridian was to the sine of eight points or radius.

After captain Flinders's arrival in England, he made application to the lords commissioners of the Admiralty to have experiments tried on board some of his majesty's ships, that the observations made during his voyage might be verified; and a series of observations was accordingly made on board five different ships at Sheerness and Portsmouth, which fully established the accuracy of his former conclusions.

Should this rule, upon further trial, be found to answer under all circumstances, we must consider it as a most important acquisition to our present knowledge of navigation; but those who with folly to appreciate all the consequences of this discovery, should consult Bains's treatise on the "Variation of the Compass," to which work we have been much indebted in the composition of this article, and where they will find every information of a practical kind connected with the subject.

**Theory of the Variation of the Needle.**—Dr. Halley, as we have already stated, was the first who attempted any theory relative to the variation of the compass; and from the observations which he collected, many of which are included in our preceding remarks, he conceived "that the whole globe of the earth is one great magnet, having four magnetical..."
etical poles, or points of attraction: near each pole of the equator two; and that in those parts of the world which lie nearly adjacent to any one of these magnetic poles, the needle is governed thereby; the nearest pole being always predominant over the more remote."

The pole which at present is nearest to us, he conjectures, to lie in or near the meridian of the Land's-End of England, and not above 9° from the Arctic pole: by this pole the variations in all Europe and Tartary, and the North Sea, are principally governed; though still with some regard to the other northern pole, whose situation is in the meridian passing about the middle of California, and about 15° from the north pole of the world, to which the needle has chiefly respect in all North America, and in the two oceans on either side thereof, from the Azores, westwards, to Japan, and farther.

The two southern poles, he imagines, are rather farther distant from the south pole of the world; the one about 16°, in a meridian 20° to the westward of Magellan's straits, or 95° west from London; this commands the needle in all South America, in the Pacific sea, and the greatest part of the Ethiopic ocean. The other seems to have the greatest power, and the largest dominion of all, as it is the most remote from the pole of the world, being distant from it little less than 20°, in the meridian which passes through New Holland, and the island Celebes, about 120° east from London; this pole is predominant in the south part of Africa, in Arabia, and the Red sea, in Persia, India, and its islands, and all over the Indian Sea, from the Cape of Good Hope eastwards, to the middle of the Great South Sea that divides Asia from America.

Such appears to have been the disposition of the magnetic attraction in the time of Dr. Halley; and from these data this author draws the following conclusions; viz.

1. Then, it is plain that, as our European north pole is in the meridian of the Land's-End of England, all places more easterly than that will have it on the west side of the meridian; and, consequently, the needle, respecting it with its northern point, will have a westerly variation, which will still be greater as you go to the eastward, till you come to some meridian of Russia, where it will be the greatest, and from thence will decrease again. Accordingly, in fact, we find, that at Breil the variation is but 13°; at London, 41° (in 1683); and at Dantzic, 7° west. Again, to the westward of the meridian of the Land's-End, the needle ought to have an easterly variation, were it not that, by approaching the American northern pole, (which lies on the west side of the meridian, and seems to be of greater force than this other,) the needle is drawn thereby westward, so as to counterbalance the direction given by the European pole, and to make a small westward variation in the meridian of the Land's-End itself. Yet, about the isle of Tercera, it is supposed our nearest pole may so far prevail as to give the needle a little turn to the east, though but for a very little space; the counterbalance of those two poles admitting no material variation in all the eastern parts of the Atlantic ocean, nor upon the west coasts of England and Ireland, France, Spain, and Barbary. But to the westward of the Azores, the powers of the American pole overcoming that of the European, the needle has chiefly respect to this, and turns still more and more towards it as we approach it. Whence it happens, that on the coast of Virginia, New England, Newfoundland, and in Hudson's Straits, the variation is westward, that is, it decreases as you go from thence towards Europe; and that it is lefs in Virginia and New England than in Newfoundland and Hudson's Straits.

2. This westerly variation, again, decreases as you pass over North America; and about the meridian of the middle of California, the needle again points due north; and from thence westward to Yedzo and Japan, it is supposed the variation is easterly, and half-half over, not less than 15°; and that this east variation extends over Japan, Yedzo, Tartary, and part of China, till it meets with the westerly, which is governed by the European north pole, and which is the greatest somewhere in Ruflia.

3. Towards the south pole the effect is much the same, only that here the south point of the needle is attracted. Whence it will follow, that the variation on the coast of Brazil, at the river of Plata, and so on to the straits of Magellan, should be easterly, if we suppose a magnetic pole, situated about 20° more westerly than the straits of Magellan. And this easterly variation extends eastward over the greatest part of the Ethiopic sea, till it be counterpoised by the virtue of the other southern pole, as it is about mid-way between the Cape of Good Hope and the isles of Tristan d'Alcunha.

4. From thence eastwards, the Asiatic south pole becoming prevalent, and the south point of the needle being attracted thereby, there arises a west variation, very great in quantity and extent, because of the great distance of this magnetic pole from the pole of the world. Hence it is, that in all the Indian Sea, as far as Hollandia Nova, and farther, there is constantly a west variation; and that, under the equator itself, it rises to no less than 11°, where it is most. And that, about the meridian of the island of Celebes, being likewise that of this pole, this westerly variation ceases, and an easterly one begins, which reaches to the middle of the South Sea, between Zelandia Nova and Chili, leaving room for a small west variation, governed by the American south pole.

5. From the whole it appears, that the direction of the needle, in the temperate and frigid zones, depends chiefly upon the counterpoise of the forces of two magnetic poles of the same nature; as also why, under the same meridian, the variation should be in one place 29° 1/2 west, and in another 20° 1/2 east.

6. In the torrid zone, and particularly under the equinoctial, respect must be had to all four poles, and their positions must be well considered, otherwise it will not be easy to determine what the variation shall be, the near pole being always stronger; yet not so as necessarily to be counterbalanced, sometimes, by the united forces of two more remote. Thus, in failing from St. Helena, by the isle of Ascension, to the equator, on the north-west course, the variation is very little easterly, and in that whole tract is unalterable; because the South American pole, (which is considerably the nearest in the aforesaid places,) requiring a great easterly variation, is counterpoised by the contrary attraction of the North American and the Asiatic south poles; each of which, as it were, lies in those parts, weaker than the American south pole: and upon the north-west course, the distance from this latter is very little varied; and as you recede from the Asiatic south pole, the balance is still preferred by an accese towards the North American pole. In this case, no notice is taken of the European north pole; its meridian being a little removed from those of these places, and of itself requiring the same variations which we here find.

After the same manner may the variations in other places, under and near the equator, be accounted for, upon Dr. Halley's hypothesis.

But in order to account for the variation of the variation, it was observed, that from many of the observed phenomena, it seemed to follow that all the magnetic poles have a motion
motion westward: but if it be so, it is evident that it is not a rotation about the axis of the earth; for then the variations would continue the same in the same parallel of latitude (the longitude only changed), as much as the motion of the magnetic poles: but the contrary is found by experience; for there is no where, in the latitude of 51° North, between England and America, a variation of 11° East, at this time; as it was once here at London. Wherefore it seems, that our European pole is become nearer the Arctic pole than it was heretofore; or else, that it has lost part of its virtue.

But whether these magnetic poles move altogether with one motion, or with several, whether equally, or unequally; whether circular, or libratory: if circular, about what centre; if libratory, after what manner; are things yet unknown.

This theory seems yet somewhat obscure and defective: to suppose four poles in one magnetic globe, in order to account for the variation, is a little unnatural; but to conceive those poles to move, and that by such laws as to solve the variation of the pole, is still more extraordinary. In effect, the solution appears not much less implicit and arbitrary than the problem.

The learned author of the theory, therefore, found himself under a necessity to solve the phenomena of his solution; and with this view, he presented the following hypothesis. The external parts of the globe he considers as the shell, and the internal as a nucleus, or inner globe; and between the two, he conceives a fluid medium. That inner earth, having the same common centre and axis of diurnal rotation, may turn about with our earth each twenty-four hours. Only the outer sphere having its turbinating motion some small matter either swifter or slower than the internal ball; and a very minute difference in length of time, by many repetitions, becomes sensible; the internal parts will, by degrees, recede from the external, and not keeping pace with one another, they will appear gradually to move either eastward or westward, by the difference of their motions.

Now, suppose such an internal sphere, having such a motion, the two great difficulties in the former hypotheses are easily solved; for if this exterior shell of earth be a magnet, having its poles at a distance from the poles of diurnal rotation; and if the internal nucleus be likewise a magnet, having its poles in two other places, different also from the axis; and these latter, by a gradual and slow motion, change their place in respect of the external, we may then give a reasonable account of the four magnetic poles afore-mentioned, as likewise of the changes of the needle's variation.

The period of its motion being wonderfully great, and there being hardly a hundred years since these variations have been duly observed, it will be very hard to bring this hypothesis to a calculus; especially since, though the variations do increase and decrease regularly in the same place, yet in different places at no great distance, there are found such casual changes thereof, as can no ways be accounted for by a regular hypothesis; but seem to depend upon the unequal and irregular distribution of the magnetic matter within the substance of the external shell, or coat of the earth, which deferts the needle from the position it would acquire from the effect of the general magnetism of the whole. Of which the variations at London and Paris give a notable instance; for the needle has been constantly about 1° more easterly at Paris than at London; though it be certain that, according to the general effect, the difference ought to be the contrary way; notwithstanding which, the variations, in both places, do change alike.

Hence, and from some other things of like nature, it seems plain, that the two poles of the external globe are fixed in the earth, and that if the needle were wholly governed by them, the variations thereof would be always the same, with some irregularities, upon the account just now mentioned. But the internal sphere having such a gradual translation of its poles does influence the needle, and direct it variously, according to the result of the attractive or directive power of each pole, and, consequently, there must be a period of the revolution of this internal ball; after which the variations will return again as before. But if it shall in future ages be observed otherwise, we must then conclude that there are more of these internal spheres, and more magnetic poles, than four; which, at present, we have not a sufficient number of observations to determine, and particularly in that vast Mar del Zor, or South sea, which occupies so great a part of the whole surface of the earth. If, then, two of the poles be fixed, and two moveable, it remains to ascertain which they are that keep their place.

The author thinks it may be safely determined, that our European north pole is the moveable one of the two northern poles, and that which has chiefly influenced the variations in these parts of the world; for, in Hudson's Bay, which is under the direction of the American pole, the change is not observed to be near so far as in these parts of Europe, though the pole be much farther removed from the axis. As to the south poles, he takes the Atlantic pole to be fixed, and, consequently, the American pole to move.

This granted, it is plain that the fixed poles are the poles of this external shell, or cortex, of the earth; and the other the poles of the magnetic nucleus, included and moveable within the other. It likewise follows, that this motion is westwards, and, by consequence, that the aforesaid nucleus has not precisely attained the same degree of velocity with the exterior parts in their diurnal revolution; but so nearly equals it, that, in 365 revolutions, the difference is scarcely sensible. That there is any difference of this kind arises hence, that the impulse by which the diurnal motion was impressed on the earth, was given to the exterior parts; and from thence, in time, communicated to the internal; but not so as yet perfectly to equal the velocity of the first motion impressed on, and still conferred by the superficial parts of the globe.

As to the precise period, we want observations to determine it, though the author thinks we may, with some reason, conjecture, that the American pole has moved westward 4° in ninety years, and that the whole period thereof is performed in about seven hundred years.

Mr. Whitson, in his "New Laws of Magnetism," raises several objections against this theory. See Magnetism.

M. Euler, the fon of the celebrated geometer of that name, has also controverted and conftrued the above theory; he thinks that two magnetic poles placed on the surface of the earth will sufficiently account for the variation; and he then endeavours to shew, how we may determine the declination of the needle, at any time, and on every part of the globe, from this hypothesis. But we must refer for the particulars of this reasoning to the "Histoire de l'Académie Royale des Sciences et Belles-Lettres de Berlin," for 1775.

Various other theories have been fugggled by later authors, but most of these have been already alluded to under our articles Magnetism, Dipping-Needle, &c.; we shall, therefore, here conclude this article, by referring the reader for a more minute account of the various theories, particularly that of Coulomb, to Hail's "Elementary Treatise on Natural Philosophy," translated by Gregory, and to the first chapter of the third volume of Biot's "Traité de Physique."
VARIATION.

VARIATION or Declination of the Needle. To observe the.—

Draw a meridian line, as directed under MERIDIAN, then, a style being erected in the middle of it, place a needle thereon, and draw the right line which it hangs over. Thus will the quantity of the variation appear.

Or thus: as the former method of finding the declination cannot be applied at sea, others have been thought of, the principal of which follow: suspend a thread and plummet over the compass, till the shadow falls through the centre of the card; observe the rhumb, or point of the compass, which the shadow touches when it is the shortest. For the shadow is then a meridian line; consequently the variation is shown.

Or thus: observe the rhumb in which the sun, or some star, rise and set; bifect the arc intercepted between the rising and setting; the line of bisection will be the meridian line; consequently the declination is had as before. The same may be had from two equal altitudes of the same star, observed either by day or night.

Or thus: observe the rhumb in which the sun, or some star, rise and set; and from the latitude of the place find the eastern or western amplitude, for the difference between the amplitude, and the distance of the rhumb observed, from the eastern rhumb of the card, is the variation sought. See Azimuth Compass.

Note, to have the eastern or western amplitude accurately, regard must be had to the refraction. See Refraction.

For the more commodious observing in what rhumb of the compasses the sun, or a star, is seen, it will be proper to have two little apertures, or glafs windows, opposite to each other, under the limit of it, with a telescope-fight fitted to one of them, and to the other a fine thread.

The use of the variation is to correct the courses a ship has steered by the compasses: e.g. given the course set, and the variation of the compasses, and let it be required to find the true course the ship steers: if the variation is west, call the N.W. quarter the 1st, the S.W. the 2d, the S.E. the 3d, and the N.E. the 4th; but if the variation be east, call the N.E. quarter the 1st, the S.E. the 2d, the S.W. the 3d, and the N.W. the 4th. Then, if the course be set in the 1st or 3d quarters, add the variation to the points or degrees in the given course; but if in the 2d or 4th quarters, subtract, and the sum in the former, or the difference in the latter case, will be the course corrected by the variation.

VARIATION of Curvature, in Geometry, is used for that inequality, or change, which happens in the curvature of all curves, except the circle. And this variation or inequality constitutes the quality of the curvature of any line.

Sir Isaac Newton makes the index of the inequality or variation of curvature, to be the ratio of the fluxion of the radius of curvature to the fluxion of the curve: and Mr. Maclaurin, to avoid the perplexity that different notions, connected with the same terms, occasion to learners, has adopted the same definition; but he suggests, that this ratio gives rather the variation of the ray of curvature, and that it might have been proper to have measured the variation of curvature rather by the ratio of the fluxion of the curve itself to the fluxion of the curve; so that the curvature being inversely as the radius of curvature, and, consequently, its fluxion as the fluxion of the radius itself directly, and the square of the radius inversely, its variation would have been directly as the measure of it, according to Sir Isaac Newton's definition, and inversely as the square of the radius of curvature.

According to this notion, it would have been measured by the angle of contact contained by the curve and circle of curvature, in the same manner as the curvature itself is measured by the angle of contact contained by the curve and tangent. The reason of this remark may appear from this example: The variation of curvature, according to Sir Isaac Newton's explication, is uniform in the logarithmic spiral, the fluxion of the radius of curvature in this figure being always in the same ratio to the fluxion of the curve; and yet, while the spiral is produced, though its curvature decreases, it never vanishes, which must appear a strange paradox to those who do not attend to the import of Sir Isaac's definition. Newton's Meth. of Flux. and Inf. Series, p. 76. Maclaurin's Fluxions, art. 386. Phil. Trans. N.S. 4th. p. 342.

The variation of curvature at any point of a conic section, is always as the tangent of the angle contained by the diameter that passes through the point of contact, and the perpendicular to the curve at the same point, or to the angle formed by the diameter of the section, and of the circle of curvature. Hence the variation of curvature vanishes at the extremities of either axis, and is greatest when the acute angle, contained by the diameter, passing through the point of contact and the tangent, is least.

When the conic section is a parabola, the variation is as the tangent of the angle, contained by the right line drawn from the point of contact to the focus, and the perpendicular to the curve. See CURVATURE.

VARIATION of Ratios. In the investigations of the relation which varying and dependent quantities bear to each other, conclusions are frequently more readily obtained by expressing only two terms in each proportion, than by retaining the four. But although in considering the variation of such quantities two terms only are expressed, it will be necessary to bear constantly in mind that four are supposed, and that the operations by which our conclusions are in this case obtained, are in reality the operations of four proportionals.

1. One quantity is said to vary directly as another, when their magnitudes depend wholly upon each other, and in such a manner, that if the one be changed, the other is changed in the same proportion; thus, let A and B be mutually dependent upon each other in such a way, that if A changes to any other value a, B is changed to another value b, such that A : a :: B : b; then A is said to vary directly as B, which is denoted by the symbol of general proportion \( \alpha \) placed between the two quantities. Thus, for example, while the altitude of a triangle remains constant, the area varies directly as the base, or the area \( \propto \) base; for if the base be increased or diminished, the area is increased or diminished in the same proportion.

2. One quantity is said to vary inversely as another, when one cannot be changed in any manner; but the reciprocal of the other is changed in the same proportion. A varies inversely as B, or A \( \propto \frac{1}{B} \), if when A is changed...
VARIATION.

To $a$, $B$ is changed to $b$, in such a manner, that

$$A : a :: \frac{1}{B} : \frac{1}{b}; \text{ or } A : a :: b : B.$$  

For example, if the area of a triangle be given, the base varies inversely as the perpendicular altitude; for let $A$ and $a$ represent the altitude of two triangles of equal areas, and $B$ and $b$ their bases; then

$$\frac{A \times B}{2} = \frac{a \times b}{2}; \text{ or } A \times B = a \times b;$$

therefore,

$$A : a :: b : B; \text{ or } A : a :: \frac{1}{B} : \frac{1}{b}.$$  

3. One quantity is said to vary as two others jointly, if, when the former is changed in any manner, the product of the other two is changed in the same proportion; that is, $A$ varies as $B$ and $C$ jointly, or $A \propto BC$, when $A$ cannot be changed to $a$, but $BC$ is changed to $b$, such that $A : a :: BC : cb$. The area of a triangle, for example, varies as the base and altitude jointly; for let $A$, $P$, $B$, represent the area, perpendicular, and base of one triangle, and $a$, $p$, $b$, the corresponding quantities in another; we know that $A = \frac{1}{2}Pb$, and $a = \frac{1}{2}pb$; consequently $\frac{A}{a} = \frac{Pb}{pb}$, or $A : a :: BP : bp$.

4. One quantity is said to vary directly as a second, and inversely as a third, when the first cannot be changed in any manner; but that the second, multiplied by the reciprocal of the third, is changed in the same proportion. That is, $A$ varies as $\frac{B}{C}$, or $A \propto \frac{B}{C}$, when $A : a :: \frac{b}{c}$; $A$, $B$, $C$, and $a$, $b$, $c$, being corresponding values of these quantities. For example, the base of a triangle varies as the area directly, and as the altitude inversely; for as in the preceding example, $\frac{BP}{A} = \frac{a}{b}$; if we multiply both sides by $\frac{P}{a}$, we have $\frac{BP}{b} = \frac{Pb}{pa}$, whence $B : b :: \frac{A}{P} : \frac{a}{p}$.

The following are some of the principal propositions relating to the ratio of variable quantities.

If $A \propto B$, and $B \propto C$; then $A \propto BC$.

If $A \propto B$, and $B \propto \frac{1}{C}$; then $A \propto \frac{1}{C}$.

If $A \propto C$, and $B \propto C$; then $A \pm B \propto \sqrt{BC}$.

If $A \propto B$, and $m$ is any given number, $A \propto mB$.

If $A \propto B$; then $A^a \propto B^{b}$; or $A^{\frac{a}{b}} \propto B^{\frac{a}{b}}$.

If $A \propto a$, and $M \propto m$; then $AM \propto am$.

If $A \propto BC$; then $B \propto \frac{A}{C}$, and $C \propto \frac{A}{B}$.

If $A \propto B$; then $A \propto \frac{1}{B}$, and $B \propto \frac{1}{A}$.

If $A \propto B$, and $C \propto D$; then $AC \propto BD$.

Wood’s Algebra.

VARIATION, Calculus of, is a department of the modern analysis, which we owe, as a distinct branch, to the inventive genius of Lagrange, who published his first memoir on this subject in the second volume of the Transactions of the Academy of Sciences of Turin, in 1762; and his second memoir, published in the fourth volume of the same Transactions, in 1770, gave to this theory a perfection and generalization far beyond what it was supposed capable of possessed. This method was also in the interval illustrated in the most simple and elementary manner by the celebrated Euler, in the Memoirs of the Academy of Sciences at Peterburgh for 1764, as it was afterwards in the third volume of his Calcul Integral, and again in the Acta Petro, for 1771. Since that time it has been treated of by different authors at greater or less extent; and to Mr. Woodhouse, of Cambridge, we are indebted for a very neat little volume, in which this subject is handled in a very clear and perspicuous manner, from which work we have already given a few extracts under the article ISOPEIMETRY. Boffut, also, in vol. ii. of his “Traité de Calcul Differentiel et de Calcul Integral,” has a very periphrastic chapter on the calculus of variations, of which we shall avail ourselves in the present instance.

Let there be any indefinite expression or function compounded of variable and constant quantities, which changes its value by the increase or diminution of one or more of the elements which it contains: it will thus undergo a variation, and the method of finding this is what is called the calculus of variations.

In the same manner as $x$ is made to denote the fluxion of $x$, and $d$ the differential of $x$; so $\delta x$ is used to indicate the variation of $x$; and the fundamental rules of this calculus are founded on the same principles as those of the differential calculus: at the same time, however, it is necessary to guard against confounding the one with the other. A very simple example will shew clearly the distinction that must be made between the two cases.

Let us suppose the equation $y^2 = ax$, which denotes the relation between the absciss $A P = x$, and ordinate $PM = y$, of a parabola $AM$ (Plate XIII. Analyse, fig. i.), $a$ being the parameter. By drawing $PM$ indefinitely near to $PM$, and $MR$ parallel to the axis $AV$; the line $LP$, or $MR$, will represent the differential $dx$, and $MR$ the differential $dy$; and the relation of these differentials is found by the differentiation of the equation $y^2 = ax$, which gives

$$2y dy = ad x, \text{ or } dy = \frac{a dx}{2y}, \text{ or } dy = \frac{ad x}{2 \sqrt{ax}}.$$

Let us conceive now that the equation $y^2 = ax$, vary by the indefinitely small augmentation of its parameter $a$, which is one of its elements; and let us construct a second parabola $AN$, which has $a + \delta a$ for its parameter. Then supposing the absciss $AP$ to continue the same for both parabolas, it is obvious that the ordinate $PN$, of the parabola $AN$, will have for its value the primitive ordinate $PM$, augmented by the small quantity $MN$, which therefore represents the variation that the ordinate $PM$ undergoes in consequence of the variation of the parameter $a$; hence, in representing by $\delta y$ the variation of $y$, as that of $a$ is denoted by $a + \delta a$, the new equation will be $(y + \delta y)^2 = (a + \delta a)x$; from which subtracting the original equation $y^2 = ax$, we shall have (neglecting, as in the differential calculus, the variations of the second order) $2y \delta y = ax \delta a$, or $\delta y = \frac{ax \delta a}{2y}$, or $\delta y = \frac{\sqrt{ax} \delta a}{2\sqrt{ax}}$, an equation which exhibits the relation of the variations $\delta a$ and $\delta y$.

If, also, we make the absciss $AP$ vary by the indefinitely small quantity $Pp = \delta x$, the corresponding ordinate for the parabola $AN$ will be $q\eta$, and the line $\delta x$ will represent the variation of the primitive ordinate $PM$. Now to find the relation between the variations $\delta x$, $\delta y$, $\delta p$, we must substitute in the equation $y^2 = ax, (a + \delta a)$ for $a$, 

$$\sqrt{x + \delta x} = \sqrt{a + \delta a},$$
(x + \delta x) for x, and (y + \delta y) for y, and the equation becomes

\[(y + \delta y) = (a + \delta a) (x + \delta x)\]

from which subtracting \(y = ax\), we shall have

\[2y \delta y = x \delta a + a \delta x\]

therefore,

\[\delta y = \frac{x \delta a + a \delta x}{2y}\]

which is an expression for the variation \(\delta y\) of the ordinate \(PM\).

In this example, (and the same has place for all similar equations,) the parameter \(a\), and its variation \(\delta a\), are constant quantities for the entire parabolas, while those of the co-ordinates \(P\) and \(A\) continually change; the changes, therefore, relative to the same parabola belong to the differential calculus, and those which result from the passage of one parabola to another, to the calculus of variations. Any one of the variations \(\delta x, \delta y, \delta a, \delta y\), may be arbitrarily assumed; as, for example, we may suppose \(\delta x = dx\), but this supposition being once made, the values of the other variations must be subordinate to this, and we cannot therefore afterwards make \(\delta y = dy\), or \(\delta y = \delta a\).

There is no difficulty in determining the variations of every order for algebraical and circular quantities, and common exponents; the operations being exactly the same as in the differential calculus; we therefore obtain the variations by the same rules, and have only to write \(\delta\) instead of \(d\), and in this respect the calculus of variations return again to the differential calculus; but this latter will not be sufficient when it is required to determine the variation of a function, which contain in themselves the sign of integration; thus, for example, let the integral formula be \(\int V \, dx\), where \(V\) is any function of \(x, y, z\), and \(x, y, z\), constant quantities; we difference this by omitting the sign \(f\); that is, \(d (\int V \, dx) = V \, dx\); but the expression \(\delta (\int V \, dx)\) is very different, as we shall see in what follows.

Now the principal object of the calculus of variations, is to determine the variation of these sorts of integral formulae; let us, therefore, endeavour to establish the principles which are to serve as the basis of this research.

First Principle.—The variation of a differential is equal to the differential of a variation, and reciprocally; that is, we shall have \(\delta dx = d\delta x\).

For let us suppose that the variable \(x\) represent the ordinate of a curve; then this ordinate will change by differentials while it belongs to the same curve, and by variations in passing from the proposed curve to the curve indefinitely near to the first. In the primitive curve, let \(x\) be the concentric value to \(x\), and consequently \(x' = x + d\, x\), or \(x = x' - d\, x\). Now taking the variation of this last equation, we shall have \(\delta x = \delta x' = \delta x\); and in the same manner \(x\) and \(x'\) are concentric values in the series of \(x'\)'s, we may consider \(x\) and \(x'\) as concentric values in the series of \(x'\)'s, so that \(\delta x = x' + \delta x\), or \(\delta x = x' - \delta x\); thus in equating these two values of \(x' - \delta x\), we shall have \(\delta x = dx\).

Hence if we express which contains any number of \(dx\) and \(dy\)'s affecting one and the same variable, we make these characteristics change place at pleasure; for we have seen that \(\delta dx = dx\); and in the same manner, we may for \(\delta dx\) write \(d\delta x\), or \(d\delta x\); and for \(\delta dx\) we may write \(d\delta x\), or \(d\delta x\), or \(d\delta x\), and so on of others.

Second Principle.—The variation of an integral formula is equal to the variation of its differential; that is, \(\delta f = f'\delta x\).

Let \(f = z\), and consequently \(\delta z = dz\), we shall have by taking the variations \(\delta z = d\, z\), or \(\delta z = dz\); and integrating this last equation, we obtain \(\delta z = dz = \delta f\).

Hence in general integrations, we change at pleasure the signs \(f\) and \(\delta z\); for we have seen that \(\delta f = f'\delta x\); and in the same manner, \(\delta f = f'\delta x\); so also \(\delta f'\delta z = f'f'\delta x\); and so on of others.

On the Method of determining the Variations of indefinite integral Formulas.—By indefinite integral formulae, is here to be understood those expressions which contain the sign \(f\), and such at the same time that the integration cannot be effected; these formulae are said to be simple, when they contain only one sign \(f\), and compounded, when they contain two or more such signs, or when they are any function of simple integral formula, combined or not with algebraical quantities, by addition, multiplication, or division.

Let us begin by considering those formulae which contain only two variable quantities \(x\) and \(y\), and between which we shall always suppose the relation \(d\, y = p\, dx\), \(d\, q = q\, dx\), \(d\, r = r\, dx\), \&c., a supposition which it will be very necessary to bear in mind.

Problem I.

To investigate a general rule for determining the variation of any indefinite integral formula \(f \, dx\).

Whatever may be the quantity \(\pi\), we have always from the second principle given above, \(\delta f = \frac{x}{\pi} = f'\delta x\); but \(\delta f = \delta (\pi \, dx) = \pi \, dx + \pi \, d\, x\); and the first principle gives \(\delta d\, x = \delta x\); whence \(\delta f = f'\delta x = f' \, d\, x + f'_d \, dx\).

Now by the method of integrating by parts, the last term

\(\int f' \, dx = \pi \, dx - \int f \, dx\)

whence by substitution,

\[\delta f = \frac{\pi}{\pi} \delta x = \pi \, d\, x + f' \, d\, x \]

Now the different values that we may attribute to \(\pi\), will give rise to different general problems; of which we shall develop a few of most common use, and which will open the way to others of a higher kind.

Problem II.

To determine the variation of the indefinite simple integral \(\int V \, dx\), \(V\) being a given function of \(x, y, z, p, q, r, \&c\).

Firstly, by the preceding problem we have

\[\delta \int V \, dx = V \, dx + \int (d\, x \, dV - d\, V \, dx)\]...

Again, the quantity \(V\) being a function of \(x, y, z, p, q, r, \&c\).

Multiply the first of these equations by \(\delta x\), the second by \(d\, x\), and subtract the first product from the second, and we shall have

\[d\, x \, \delta V - d\, V \, \delta x = N \, (d\, x \, \delta y - d\, y \, \delta x) + P \, (d\, x \, \delta p - d\, p \, \delta x) + Q \, (d\, x \, d\, q - d\, q \, dx) + R \, (d\, x \, \delta r - d\, r \, \delta x) + K\]
If now we put for $\frac{dy}{dx}, \frac{d\delta y}{d\delta x}, \frac{d\beta y}{d\beta x}, \text{ &c.}$ their values
\[ \begin{align*}
\frac{d}{dx} \delta V &= \frac{d\beta V}{d\beta x} = \\
\{ N \frac{d}{dx} (\delta y - \beta \delta x) + P \frac{d}{dx} (\delta y - \beta \delta x) + Q \frac{d}{dx} (\delta y - \beta \delta x) + &c. \\
& \int N \frac{d}{dx} (\delta y - \beta \delta x) + P \frac{d}{dx} (\delta y - \beta \delta x) + Q \frac{d}{dx} (\delta y - \beta \delta x) + &c.
\end{align*} \]
Consequently our equation (A) becomes
\[ \begin{align*}
\int \delta V \frac{d}{dx} &= V \frac{d}{dx} + \int \{ N \frac{d}{dx} (\delta y - \beta \delta x) + P \frac{d}{dx} (\delta y - \beta \delta x) + Q \frac{d}{dx} (\delta y - \beta \delta x) + &c. \\
& \int V \frac{d}{dx} + \int \{ N \frac{d}{dx} (\delta y - \beta \delta x) + P \frac{d}{dx} (\delta y - \beta \delta x) + Q \frac{d}{dx} (\delta y - \beta \delta x) + &c.
\end{align*} \]
This being established, let us make $\frac{d}{dx}$ and $\frac{d}{d\delta x}$, (a substitution that will be employed in what follows,) and differencing, we shall have
\[ \delta y - \beta \delta x = d \frac{d}{d\delta x} w. \]
But the formula $\delta y = \beta \frac{d}{d\delta x}$ gives, by taking the variations,
\[ \begin{align*}
{\delta d y} &= \beta \frac{d}{d\delta x} \beta \delta x + \beta \frac{d}{d\delta x} \beta \delta x, \text{or} \\
{\delta d y} &= \beta \frac{d}{d\delta x} \beta \delta x + \beta \frac{d}{d\delta x} \beta \delta x, \text{or} \\
{\delta d y} &= \beta \frac{d}{d\delta x} \beta \delta x + \beta \frac{d}{d\delta x} \beta \delta x.
\end{align*} \]
Whence, making the necessary substitutions, we obtain finally
\[ \begin{align*}
\int \frac{d}{dx} \delta w \left( N \frac{d}{dx} + \frac{d^2 Q}{d x^2} - \frac{d^2 R}{d x^2} + &c. \right) \\
+ V \frac{d}{dx} \beta \delta x + \beta \frac{d}{d\delta x} \left( P \frac{d}{dx} + \frac{d^2 R}{d x^2} - &c. \right) \\
+ \frac{d^3 Q}{d x^3} + \frac{d^3 R}{d x^3} + &c. \ldots \ldots (D)
\end{align*} \]
a formula in which $\frac{d}{dx}$ is supposed constant.
It will be seen from this expression for the variation $\delta V \frac{d}{dx}$, that it includes two distinct orders of terms, the one affected with the sign $\delta$, and the other free from it. And further, that the integration by parts necessarily introduces certain constant quantities which must be annulled to the terms of the latter species. The aggregate of the terms affected with the sign $\delta$ extends through all the variation, viz. from its commencement to its termination, while the other quantities answer only to the beginning and end of the variation. This remark finds its application in the treating of the maxima and minima of quantities.

**Prob. III.**

To determine the variation of the indefinite compound integral $\int Z \frac{d}{dx}$, $Z$ being a given function of the indefinite simple integral formula $\int V \frac{d}{dx}$, where again $V$ is a function of $x, y, z, \beta, \gamma, \delta, \text{ &c.}$ as in the preceding problems.

First by Prob. 1.
\[ \delta Z \frac{d}{dx} = Z \frac{d}{dx} + \int \left( d \frac{d}{dx} Z - d Z \frac{d}{dx} \right) \ldots \ldots (E) \]
And supposing $\int V \frac{d}{dx} = t$, or $V \frac{d}{dx} = d t$; since $Z$ is by hypothesis a function of $t$, we shall have $d Z = T \frac{d}{dt} t$; therefore
\[ \begin{align*}
\delta Z \frac{d}{dx} &= T \frac{d}{dt} t - T \frac{d}{dx} \frac{d}{dt} t. \\
\text{Consequently we have} \quad \delta \int Z \frac{d}{dx} &= Z \frac{d}{dx} + \int \left( \frac{d}{dx} \frac{d}{dt} V - d V \frac{d}{dx} \right) \ldots \ldots (F)
\end{align*} \]
Now integrating the last term by parts, and representing the integral $\int T \frac{d}{dx} b$ by $b$, for the sake of abbreviating, the preceding equation becomes (F)
\[ \delta \int Z \frac{d}{dx} = Z \frac{d}{dx} + b \int \left( \frac{d}{dx} \frac{d}{dt} V - d V \frac{d}{dx} \right) - b \int \left( \frac{d}{dx} \frac{d}{dt} V - d V \frac{d}{dx} \right). \]
This being premised, and making here for the values of \(dV\) and \(\delta V\) the same suppositions, and the same calculations as in the preceding problem, we shall obtain
\[
b \int (dx \delta V - dV \delta x) = 
\]
\[
b \int dx \delta w \left( N - \frac{dP}{dx} \frac{d^2 Q}{dx^2} - \frac{d^3 R}{dx^3} + &c. \right) + 
\]
\[
b \delta w \left( P - \frac{dQ}{dx} \frac{d^2 R}{dx^2} + \frac{d^3 R}{dx^3} - &c. \right) + 
\]
\[
\frac{bd^2 \delta w}{dx} \left( Q - \frac{dR}{dx} + &c. \right) 
\]
\[
\frac{bd^3 \delta w}{dx^3} \left( R - &c. \right) \ldots \ldots (G) 
\]

And we shall find in the same manner, by putting \(b\) \(N\) for \(N\), \(b\) \(P\) for \(P\), \(b\) \(Q\) for \(Q\), &c.

\[
b \int (dx \delta V - dV \delta x) = 
\]
\[
b \int dx \delta w \left( bN - \frac{d(bP)}{dx} \frac{d^2 (bQ)}{dx^2} - \frac{d^3 (bR)}{dx^3} + &c. \right) + 
\]
\[
b \delta w \left( bP - \frac{d(bQ)}{dx} \frac{d^2 (bR)}{dx^2} + \frac{d^3 (bR)}{dx^3} - &c. \right) + 
\]
\[
\frac{bd^2 \delta w}{dx} \left( bQ - \frac{d(bR)}{dx} + &c. \right) + 
\]
\[
\frac{bd^3 \delta w}{dx^3} \left( bR - &c. \right) 
\]

Finally, substituting in Equation \((G)\), instead of \(b \int (dx \delta V - dV \delta x)\) and \(b \int (dx \delta V - dV \delta x)\), their values, which we have found above, we shall have the expression for the variation of \(\delta f/Z \, dx\).

As in these sorts of problems, it is required to find the variation which answers to a given absciss \(a\), it is evident that in denoting by \(H\) the integral \(f/T' \, dx\), corresponding to this absciss, we may regard \(H\) as a given constant quantity relative to the total variation, while \(b\) constantly represents the indefinite integral \(\frac{f}{T'} \, dx\), that is to say, the integral for an indeterminate part of the absciss \(a\).

Then, in writing \(H\) for \(b\) in the part
\[
b \int (dx \delta V - dV \delta x), 
\]
and passing \(H\) under the sign of integration, the expression
\[
b \int (dx \delta V - dV \delta x) - \int (dV \delta x) = 
\]
will become
\[
\int (H - b) (dx \delta V - dV \delta x). 
\]

If, for the sake of abridging, we make \(H - b = k\), which gives \(d(H - b) = dk\), \(H\) being constant; now, making conformably to these remarks, and to these abbreviations, the substitutions indicated at the end of the preceding article for equation \(G\), we shall find that this equation becomes

\[
\delta f/Z \, dx = \left\{ f \frac{dx}{dV} \left( kN - \frac{d(kP)}{dx} \frac{d^2 (kQ)}{dx^2} - \frac{d^3 (kR)}{dx^3} + &c. \right) + 
\right.
\]
\[
+ Z \delta x + k \delta w \left( kP - \frac{d(kQ)}{dx} \frac{d^2 (kR)}{dx^2} + &c. \right) + 
\]
\[
+ \frac{k \delta^2 w}{dx} \left( kQ - \frac{d(kR)}{dx} + &c. \right) + 
\]
\[
+ \frac{k \delta^3 w}{dx} \left( kR - &c. \right) \ldots \ldots (H) 
\]

and thus Equation \(I\) becomes
\[
\delta f/Z \, dx = Z \delta x + f \left\{ L' \frac{dx}{dV} \left( dx \delta V - dV \delta x \right) \right\} + 
\]
\[
+ f \left\{ N' \frac{dy}{dx} \left( \delta y - \frac{dP}{dx} \delta x \right) \right\} + 
\]
\[
+ P' \frac{dx}{dV} \left( \delta p - q \delta x \right) + Q' \frac{dx}{dV} \left( \delta q - r \delta x \right) + 
\]
\[
+ R' \frac{dx}{dV} \left( \delta r - s \delta x \right) + &c. \ldots \ldots (K) 
\]

Prob. IV.

To determine the variation of the indefinite integral formula \(\int f/V \, dx\), \(Z\) being a function of \(x, y, p, q, r, &c.\); and of the indefinite simple integral formula \(\int V \, dx\), where \(V\) is the same as before.

First, we have
\[
\delta f/Z \, dx = Z \delta x + f \left\{ dx \delta Z - dZ \delta x \right\} \ldots \ldots (I) 
\]

Let us suppose \(f/V \, dx = t\), or \(V \, dx = dt\). The quantity \(Z\) being given in \(t\), \(x, y, p, q, &c.\), we shall have
\[
dZ = L'dt + M'dx + N'dy + P'dp + Q'dq + &c. 
\]
\[
\delta Z = L'd \delta t + M'd \delta x + N'd \delta y + P'd \delta p + Q'd \delta q + &c. 
\]

expressions in which the quantities \(L', M', &c.\) are functions of \(t, x, y, p, q, &c.\).

When we draw, by a proceeding similar to that which has been employed in the second problem,

\[
dx \delta Z - dZ \delta x = L'(dx \delta t - d \delta dx) + N' dx \delta y - p \delta dx \right) + 
\]
\[
+ P' dx \delta (\beta p - q \delta x) + Q' dx \delta (\beta q - r \delta x) + 
\]
\[
+ R' dx \delta (\beta r - s \delta x) + &c. 
\]

But \(dt = V \, dx\), and \(dx \delta t = f/V \, dx = \delta V \, dx + f(dx \delta V - dV \delta x)\); therefore
\[
L'(dx \delta t - d \delta dx) = L'dx (dx \delta V - dV \delta x); 
\]
If now, as in the second problem, we make
\[ dV = Mdx + Ndy + Pdp + Qdq + \&c. \]
we shall have
\[ dx \delta V - dV \delta x = Ndx(\delta y - p \delta x) + Pdx(\delta p - q \delta x) + Qdx(\delta q - r \delta x) + Rdx(\delta r - s \delta x) + \&c. \]
Substituting, in equation (K), instead of \( \int_1^2 dx \) (\( d \times \delta V - dV \delta x \)), its actual value \( \int_1^2 (dx \delta V - dV \delta x) \), and instead of \( \delta x \delta V - dV \delta x \), the value assumed above, reuniting the several parts, and for the sake of abridging, making \( N' + N'' = N' + N'' + K'P + P' = P'' + K'Q + Q' = Q'' \&c. \) this equation will become
\[ \delta \int Z dx = Z dx + \{ N'' dx (\delta y - p \delta x) + P'' dx (\delta p - q \delta x) \}
\[ + Q'' dx (\delta q - r \delta x) + R'' dx (\delta r - s \delta x) + \&c. \}
\[ = Z \delta x + \int N'' dx (\delta y - p \delta x) + \int P'' dx (\delta p - q \delta x) \]
\[ + \int Q'' dx (\delta q - r \delta x) + \int R'' dx (\delta r - s \delta x) + \&c. \]
An equation which, being of the same kind as Equation (B), Prob. II, will give in the same manner, by making \( \delta y - p \delta x = \delta w \), and supposing \( dx \) constant,
\[ \delta \int Z dx = \left\{ \begin{array}{l}
\int dx \delta w (N'' - \frac{d P''}{dx} + \frac{d^2 Q''}{dx^2} - \frac{d^3 R''}{dx^3} + \&c.)
\int Z dx + \int \frac{\delta w}{dx} (P'' - \frac{d Q''}{dx} + \frac{d^2 R''}{dx^2} - \&c.)
\int Z dx + \int \frac{\delta w}{dx} (Q'' - \frac{d R''}{dx} + \&c.)
\int Z dx + \int \frac{\delta w}{dx} (R'' - \&c.) + \&c. \ldots \ldots (L)
\end{array} \right. \]
It may be remarked here, the same as in Problem II, that the expression of this variation includes two distinct species of terms; viz. those which are affected with the sign \( \delta \), and those that are free from it; and moreover, that the integrating by parts introduces certain constant quantities, which are additive to the terms of the second species; and that the aggregate of the terms affected with the sign \( \delta \) extends through all the variation, viz. from the place where it commences to that where it finishes; while the other terms answer only to the beginning and end of the variation.

Probl. V.

To determine the variation of the indefinite simple integral \( \int V dx \), where \( V \) is any given function of three variables \( x, y, z \), and their differentials.

We shall have at first, the same as in the formula of two variables,
\[ \delta \int V dx = V \delta x - \int (dx \delta V - dV \delta x) \ldots \ldots (M) \]
Let us suppose \( dx = P dx, \delta p = q dx, \delta q = r dx, \delta r = s dx, \&c. \) the letters \( p, q, r, \&c. \) \( \delta p, \delta q, \delta r, \&c. \) \( \delta p', \delta q', \delta r', \&c. \) expressing functions of \( x, y, z \), and their differentials.

Now making
\[ dV = \left\{ M dx + Ndy + Pdp + Qdq + Rdr + \&c. \right\} \]
\[ + F dx + Gdp + Hdq + Idr + \&c. \]
and hence, also,
\[ \delta \int V dx = \left\{ M \delta x + N \delta y + P \delta p + Q \delta q + R \delta r + \&c. \right\} \]
\[ + F \delta x + G \delta p + H \delta q + I \delta r + \&c. \]
expressions in which \( N, M, P, Q, R, \&c. \) \( F, G, H, I, \&c. \) are given functions of \( x, y, z, p, q, r, \&c. \) \( p', q', r', \&c. \) \( \&c. \) we shall find
\[ dx \delta V - dV \delta x = \]
\[ N dx (\delta y - p \delta x) + P dx (\delta p - q \delta x) + Q dx (\delta q - r \delta x) + R dx (\delta r - s \delta x) + \&c. \]
\[ F dx (\delta p - q \delta x) + G dx (\delta q - r \delta x) + H dx (\delta r - s \delta x) + I dx (\delta s - t \delta x) + \&c. \]

To which it will be necessary to add certain terms, in order to complete the integral, as stated in the conclusion of our second and last problem.

The formulæ above considered are the simplest of their kind, and the solution of them is found by a calculation comparatively direct and easy to perform; but it may happen, that in the general expression \( \int Z dx \), of which the variation is required, the quantity \( Z \) is a function of many variables, consisting of algebraical expressions and various indefinite simple integrals; or the quantity \( Z \) may depend upon the integration of an equation of any order; it may also, in some cases, be required to find the variation of a formula under a double...
a double or triple, &c. sign of integration, as \( \int f(x) \, dx \), in which \( Z \) is any function of \( x \) and \( y \), and so of others. In all these cases, except the last, the variations are determined in the same manner, but the calculus of finite becomes more long and intricate, which our limits will not allow of our entering upon in this place. On this head, therefore, the reader is referred to the several works mentioned in the introduction to the present article. We only propose giving here one problem, by way of illustrating the preceding calculus; viz.

To determine the curve OMD (Plate XIII. fig. 2.) through which a body will pass from the point \( O \) to \( D \), not in the same vertical line, in the shortest time possible.

Let \( A \) the vertical plane, in which are situate the two given points \( O \) and \( D \); \( A \) the axis of the abscissas; and the horizontal line \( A \) that of the ordinates. Also, let us suppose an abscissa \( A = x \), the ordinate \( P \) \( M = y \), and consequently the element of the arc \( \sqrt{dx^2 + dy^2} = \sqrt{(1 + p') \cdot dx} \), making \( dy = p \, dx \).

Now whatever may be the nature of the curve OMD, the velocity of the body along and in the direction of the element of the curve \( Mm \), is equal to that which would have acquired in falling from a certain vertical height; all these heights deriving their origin in the same horizontal line, which we may suppose to be the axis of the ordinates \( A \), the position of this axis being arbitrary.

Thus, calling \( g \) the gravity of the body, the velocity along \( Mm \) will be expressed by \( \sqrt{2 \, g \times} \), and consequently the time in passing \( \sqrt{dx^2 + dy^2} = \sqrt{(1 + p') \cdot dx} \); therefore we shall have

\[
\int \sqrt{(1 + p')} \, dx = a \, \text{minimum},
\]

or, simply

\[
\int \sqrt{\frac{dy}{dx}} = a \, \text{minimum}.
\]

Now generally, when a quantity becomes a maximum or a minimum, its variation is equal to zero; consequently we shall have

\[
\frac{d}{dx} \int \sqrt{(1 + p')} = 0.
\]

Now this agrees with our formula \( \int \sqrt{\frac{dy}{dx}} \, dx \) in the second problem; viz. in the present case \( V = \sqrt{(1 + p')} \); consequently we shall have \( dV = -\frac{p}{2 \, \sqrt{(1 + p')}} \cdot dx + \frac{\sqrt{\frac{dy}{dx}}}{\sqrt{(1 + p')}} \cdot dp \); an expression which, being compared with the general value

\[
dV = M \, dx + N \, dy + P \, dp + \text{&c.}
\]

gives here

\[
M = -\frac{\sqrt{(1 + p')}}{2 \, \sqrt{(1 + p')}}; \quad N = 0;
\]

\[
P = \frac{p}{\sqrt{\frac{dy}{dx}} \cdot \sqrt{(1 + p')}}; \quad Q = 0, \quad R = 0, \quad \text{&c.}
\]

Now the expression of the variation \( \frac{d}{dx} \int \sqrt{\frac{dy}{dx}} \, dx \) comprehends generally, as we have seen in Equation (D), two parts, the one indefinite, containing the sign \( \int \), and the other definite, in which that sign is not found; and it is evident that these two parts are wholly independent of each other; and consequently, if the whole is equal to zero, these two parts are each also equal to zero; thus the equation \( \int \sqrt{\frac{dy}{dx}} \, dx = 0 \), gives in general the two following equations, of which the one is definite, and the other indefinite; viz.

\[
(1) \quad 0 = \int d \sqrt{(N - \frac{dp}{dx} + \frac{dp^2}{dx^2} - &c.)}
\]

\[
(2) \quad 0 = \left\{ \begin{array}{l}
\sqrt{\frac{dy}{dx}} \left( P - \frac{dQ}{dx} + \frac{d^2R}{dx^2} - &c. \right) \\
\frac{dp}{dx} \left( Q - \frac{dR}{dx} + &c. \right) \\
\quad & + \frac{d^3R}{dx^3} & + C, \, \text{correction.}
\end{array} \right.
\]

Equation (1) is that on which depends the nature of curves, since the second member of this equation is an indeterminate expression, which, being made equal to zero, gives to the curve OMD the character of a maximum or a minimum.

As to Equation (2), it belongs only to the extreme points of the curve OMD, which may be subject to particular conditions, wholly independent of the nature of the curve.

Now differencing Equation (1), and dividing the whole by \( \frac{dx}{dx} \), we shall have

\[
(3) \quad 0 = \frac{dp}{dx} - \frac{d^2Q}{dx^2} - \frac{d^3R}{dx^3} + &c.
\]

which gives generally the solution of the problem, where only the nature of the curve is required, that renders \( \int V \, dx \) a maximum, or a minimum; \( V \) being a function of the perpendicular co-ordinates \( x \) and \( y \) of the curve, and of the quantities \( p, q, r, &c. \) which are given by the hypothesis \( dy = p \, dx, dp = q \, dx, &c. \) remembering that the differential \( dx \) has been supposed constant.

Now to apply these general results to our problem; since we have \( N = 0 \), and \( P = \frac{dp}{dx} \cdot \sqrt{(1 + p')} \); also \( Q = 0, R = 0, &c. \) our Equation (3) becomes

\[
\frac{dp}{dx} = \frac{1}{\sqrt{x} \cdot \sqrt{(1 + p')}} \cdot \sqrt{\frac{dy}{dx}}, \quad \text{or}, \quad \frac{dp}{dx} = \frac{1}{\sqrt{x} \cdot \sqrt{(1 + p')}} \cdot \sqrt{\frac{dy}{dx}}.
\]

which is the differential equation of the curve OMD; consequently, by integrating we shall have

\[
\frac{1}{\sqrt{a}} = \frac{1}{\sqrt{x} \cdot \sqrt{(1 + p')}} \cdot \sqrt{\frac{dy}{dx}} = \frac{1}{\sqrt{a}} \cdot \sqrt{\frac{dy}{dx}}
\]

which gives

\[
\frac{dy}{dx} = \frac{x}{\sqrt{a - x}}.
\]

the equation of the reversed cycloid, its base being horizontal, and its generating circle having for its diameter the constant quantity \( a \).

This equation being integrated, will receive a second arbitrary constant \( b \); and we shall have then, in the final equation, two constants, \( a \) and \( b \), which will be determined from the condition that the cycloid passes through the two points, 0 and D.
O and D, given in position. For other examples illustrative of this calculus, see the article Isoperimetry.

Variation, in Music, is the different manner of playing or fingling the same air, tune, or song, either by subdividing the notes into several others of less value, or by adding graces, in such a manner, however, as that the tune itself may still be discovered through all its embellishments, which the French call broderies.

Thus, great masters of the last century, flattering the bad taste of the public, have condescended to make variations to old tunes; as Corelli to Tartini's ground, or "All Joy to great Cæsar," which the Italians call "La Follia d'Espagna," and which he has made the theme of his whole twelfth folio. Handel and Tartini have composed simple airs on purpose to be the ground-work of variations. The late John Christian Bach, Fitcher, Giardini, &c., have varied Scotch and Irish tunes to corrupt the public taste, instead of improving it by new compositions, which would have done them more credit, and given them less trouble. See Theme and Double.

"All Paris," says Roux, "used to go to the concert spirituel, to hear the variations of Mefiers. Guignon and Mondenville; and still at a more recent period, those of Meffis. Guignon and Gaviniès, to the tunes of the Pont-neuf, which had no other merit than that of being trifled with by the two greatest performers on the violin in France."

VARICA, in Ancient Geography, a town of Abatic Iberia, according to Ptolemy.

VARICELLA, in Medicine, a diminutive of Varicela, (the small-pox,) signifying a vesicular eruption, accompanied with flight febrile symptoms, and occurring but once in the period of human life, which is popularly termed chicken-pox and small-pox.

It will not be matter of surprize if this disease should bear the name of a lesser small-pox, and that it should have been described by the elder writers as a modification of that distemper, under various simlar appellations, such as varicela varicellae, varicelle, &c.; when we are informed by a late acute investigator of disaeas, Dr. Willan, that, from the year 1800, to the time of the publication of his essay on vaccination, in 1806, he had seen seventy-four cases of chicken-pox that had been mistaken for small-pox, after vaccine inoculation. It is true, indeed, that the diffion has been rendered somewhat more difficult, in consequence of the milder degree, shorter duration, and modified form, which the small-pox itself has been made to assume by the influence of the previous cow-pox, in the fewcases where it has occurred after this disease. Nevertheless, the remembrance is sufficient at all times to mislead ordinary observers; and the foreign nofolists, from Sauvages down to Burfeurius, have confidered the diseaee as a species of varicela. (See Sauvages Nofol. Method. clafs iii. gen. 2. Vogel, De Cognocendo. et Curand. Hominum Morbis, § 128. Burfeurius, Inf. Med. vol. ii. cap. 9.) It is singular, however, that not only some of the earliest Italian writers on the small-pox, who lived three centuries ago, have distinctly described the chicken-pox under a specific name, corysphili, and with the mention of the scarcely perceptible fever, and absence of all danger (see Vidus Vidianus, De Crystallis; and Ingraffias de Tumoribus pronter Naturam, lib. i. cap. 11;) but that the vulgar, in several countries of Europe, had distinguished it by popular appellations, even while physicians were regarding it as a modification of small-pox. Thus Daniel Senett, who was a professor at Wittemberg at the commencement of the seventeenth century, observes, in his Treatise on Small-pox and Measles, that there are other varieties, "prater cornmunes variolos et morbillos," which are popularly known in Germany by the terms schaffsklattern (sleep-pox, or sleep-bles or blains) and windbollen (wind-pox). (See his Med. Pract. lib. iv. cap. 12.) And Riverius, who was professor at Montpellier at the same period, speaks of it as familiarly known by the common people in France by the name of varicelle. (See his Praxis Med. cap. ii.) In Italy it was also known to the vulgar under the appellation of ravaoglone. Again, in our country, Fuller, who published his "Examinations" in 1730, acknowledges himself indebted to the old women for his appellation. "I have ventured to think," he says, "this is what among our women goeth by the name of chicken-pox." (P. 161.) Other popular names have been given to this disease in different parts of this country. Thus it is in many places called small-pox; in some, hives; and at Newcastle and Sunderland, water-jugs. (See Dr. Wood in the Med. and Phyf. Journal, vol. xii. p. 58.) In some places, however, the different forms which this disease itself assumes, three of which have been distinctly described by the late ingenious Dr. Willan, are designated by the terms chicken-pox, small-pox, and hives, respectively.

The character of each of these varieties, under which the varicella occasionally appears, we shall copy from the work of that excellent observer of diseases, as there is no other description of them extant of equal accuracy; and it is highly necessary to be able to discriminate between this eruption and the milder forms of small-pox, as especially that modified and altered varicella which sometimes succeeds vaccination. The only other account of the chicken-pox in our language, which bears the stamp of observation, is a paper of the late excellent Dr. Heberden, another physician of the true Hippocratic school, written in the year 1767, and published in the first volume of the Transactions of the College of Physicians, and which we shall have occasion also to quote, on the point of diagnosis, in the sequel of this article.

Dr. Willan observes, "there are three varieties of the varicella, which, from the different forms of the vehicles, may be entitled the lenticular, conoidal, and globate." And he adds, in a note, "In the northern parts of England, and in some counties of Scotland, these varieties are denominated the chicken-pox, the small-pox, and the hives. In the south, the latter varieties are called flame-pox.

1. "The lenticular varicella exhibits, on the first day of eruption, small red protuberances, not exactly circular, and having a flat shining surface, in the centre of which a minute vehicle is soon formed. This, on the second day, is filled with a whitish lymph, and it then somewhat resembles a milky vehicle, but is not so prominent, so tenue, or so regularly circumscribed: its diameter is about the tenth of an inch.

2. On the third day, the extent of the vehicles continues the same, but the lymph which they contain becomes straw-coloured. On the fourth day, many of the vehicles are broken at the most prominent part; the rest begin to shrive, and are puckered at their edges. Few of them remain entire on the fifth day, but the orifices of several broken vehicles are closed, or adhere to the skin, so as to confine a little opaque lymph within the puckered margins. On the fifth day, small thin brown scabs appear universally in the place of the vehicles.

3. The scabs, on the seventh and eighth days, become yellowish, and gradually dry from the circumference towards the centre. On the ninth and tenth days they fall off, leaving for a time red marks in the skin, without depression.

"The eruption is generally first observed on the breast and back, and afterwards on the face and extremities. As fresh vehicles arise during two or three successive days, and go through the same stages as the first, the duration of the disease is sometimes longer than I have stated above."

2. "In the conoidal varicella, the vehicles rise suddenly, and have a hard inflamed border. They are, on the first day of their
VARICELLA.

their appearance, acuminated, and contain a bright transparent lymph. On the second day they appear somewhat more turgid, and are surrounded by more extensive inflammation than on the preceding day; the lymph contained in many of them is of a light straw-colour. On the third day, the vesicles are distended; those which have been broken exhibit at the top fibrillated, and formed, by a concretion of the exuding lymph. Some of the softened vesicles, which remain entire, but have much inflammation round them, evidently contain on this day purulent fluid. Every vesicle of this kind leaves, after scabbing, a durable cicatrix or pit. On the fourth day, thin dark-brown scabs appear intermingled with other vesicles, which are rounded, yellowish, and semi-transparent. These scabs gradually dry and separate, and fall off in four or five days.

"A fresh eruption of vesicles usually takes place on the second and third day, and as each set has a similar course, the whole duration of the eruptive stage in this species of varicella is six days; the last-formed scabs, therefore, are not separated till the eleventh or twelfth day.

3. "In the small-pox, or hives, the vesicles are large and globated, but their base is not exactly circular. There is an inflammation round them, and they contain a transparent lymph, which, on the second day of eruption, resembles milk-whey. On the third day, the vesicles subside, and, as in the former species, become puckered or distended. They likewise appear yellowish, a small quantity of pus being mixed with the lymph. Some of them remain in the same state till the following morning, but, before the conclusion of the fourth day, the cuticle separates, and thin blackish scabs cover the bafes of the vesicles. The scabs dry and fall off in four or five days.

"The eruption is usually completed in three days, but I have sometimes observed a few fresh vesicles on the fourth day; in which case, therefore, the eruptive stage occupied eight days.

"The fever in varicella commences two or three days before the eruption appears, and it sometimes continues to the third day of the eruption, but is generally very slight. Its symptoms are, languor, with disposition to sleep, loss of appetite, thirst, heat of the skin, occasional flushing of the cheeks, a severe cough, soreness of the throat, a white fur on the tongue, a quick but unequal pulse, pains in the head, back, and limbs, sometimes pain in the mouth and bowels, with nausea, or vomiting of bile.

"The eruption usually commences on the breast and back, appearing next on the face and scalp, and lastly on the extremities. It is attended, especially in children, with an incessant tingling or itching, which leads them to scratch off the vesicles, so that the characteristic of the disease are often destroyed at an early period. Many of the vesicles, thus broken and irritated, but not removed, are presently surrounded by inflammation, and afterwards become pustules, containing thick yellow matter. These continue three or four days, and finally leave pits in the skin. The eruption is usually fullest in the conoid form of varicella: I have seen the vesicles close together, or coherent, but seldom confluent. When they are numerous on the scalp, some of the glands below the base of the cranium are enlarged.

"The incidental appearance of pustules among the vesicles sometimes occasions a doubt respecting the nature of the eruption." See Dr. Willan’s "Treatise on Vaccination," page 86.) Dr. Heberden says, "the principal marks by which the chicken-pox is distinguished are:

1. "The appearance, on the second or third day from the eruption, of the vesicle full of serum upon the top of the pock. The pustules which are full of the yellow liquor resemble what the genuine small-pox are on the fifth or sixth day, especially when there is a larger space than ordinary occupied by the extravasated serum. It happens to most of them, either on the first day that these vesicles are formed, or on the second day, that their tender cuticle is broken; a thin scab is then formed at the top of the pock, and the swelling of the other part abates, without its ever being turned into pus, as it is in the small-pox.

2. "Slight scabs cover the chicken-pox on the fifth day; at which time the small-pox are not at the height of their suppuration.

3. "The inflammation round the chicken-pox is very great, and the contents of them do not seem to be owing to suppuration, as in the small-pox, but rather to what is extravasated immediately under the cuticle by the fleshy vessels of the skin, as in a common blister. No wonder, therefore, that this liquid appears so soon as on the second day, and that upon the cuticle being broken, it is presently succeeded by a flight scab. Hence too, as the true skin is so little affected, no mark or scar is likely to be left." See Med. Trans. of the Coll. of Physicians, vol. i. art. 16.

To these remarks Dr. Willan adds, that "various pustules, on the first and second day of their eruption, are small, hard, globular, red, and painful. The sensation of them to the touch, on passing the finger over them, is similar to that which one might conceive would be excited by the pressure of small round seeds under the cuticle. In the varicella almost every vesicle has, on the first day, a hard, inflamed margin, but the sensation communicated to the finger in this case, is like that from a round seed, flattened by pressure." He also observes that, "on the third and fourth days, the distended or wrinkled state of the vesicles which remain entire, and the radiating furrows of others, whose ruptured apices have been closed by a flight inflammation, fully characterize the varicella, and distinguish its eruption from the firm and durable pustules of small-pox. As the vessels of the chicken-pox appear in succession during three or four days, a partial examination will not always dis¬cover the characteristic here specified. In order to form a proper judgment, practitioners should inspect the eruption on the face, breast, and limbs, attending more especially to the places in which it was first observed. If the whole eruption be viewed on the fifth or sixth day, every gradation of the progress of the vesicles will appear at the same time. This circumstance may be added to the diagnostics of varicella, as it cannot take place in the flow and regulated progress of the small-pox.

"The globated vesicles not having any resemblance to various pustules, distinguish the varicella from the small-pox, whenever they appear; for it is to be remembered, that these large vesicles are occasionally intermingled, both with the lenticular and conoid vessels of the chicken-pox. It may be said, that an acknowledged co-existence of different species, of vesicles in the same pock, tends to aggravate the distinction I have made. The vesicles, however, are, in many cases, all of the same kind; or, where they are intermingled, one sort greatly predominates. I do not contend for the perfect accuracy of nosological arrangement, but I adopt it because it is in many respects convenient. SYSTEMS OF BOTANY AND ZOOLOGY are useful, though they have not been yet brought to perfection, for we find some species which break the order of every classification proposed." Loc. cit. p. 95.

With respect to the treatment of varicella, under any of its forms, very little need be said: since it is seldom attended by any severe indisposition, and often by scarcely any perceptible disorder of any of the functions, except a little lassitude and inability for the usual exertions, a quiet,
tongue, and some loss of appetite. In these cafes, the treatment consists rather in avoiding all causes of irritation, especially in the way of diet, than in the actual administration of medicines. Where the fever is more considerable, however, not only are these cautions necessary, but it will be proper also to evacuate the bowels, by gentle means, as by a little rhubarb, or neutral salts, to take dibent drinks, and gently diaphoretic medicines.

VARICOCELE, in Surgery, derived from varis, a dilated vein, and ceple, a tumour, sometimes denotes a varicoce enlargement of the veins of the spermatic chord; but, more commonly, a similar dilatation of the veins of the scrotum; the term cirrocsele being usually applied to the other affection.

Varicocele, or a varicoce enlargement of the veins of the scrotum, is a subject of but little importance; because these vessels are never thus affected, except in consequence of some other more serious dilatation of the testicle and its coats. Indeed the varicocele is to be regarded as the mere effect of another complaint, the removal of which is the only necessary indication. This having been attended to, the swelling of the scrotal veins, which was never itself a source of much inconvenience, always subsides without further trouble.

Varicocele, considered as a varicoce enlargement of the spermatic veins, is a disease that demands greater attention; but as it has been explained in a previous volume (see Circocsele), we do not mean to detain the reader with it in the present place. One remark, however, appears to merit particular attention; a varicoce swelling of the spermatic veins is more frequently than any other disease mistaken for an omental hernia. Mr. Aylo Cooper has given the following rule, by which the two diseases may be distinguished. Place the patient in a horizontal posture, and empty the swelling by prelusion upon the scrotum; then put the fingers firmly upon the upper part of the abdominal ring, and define the patient to rise; if it be a hernia, the tumour cannot reappear as long as the prelusion is continued at the ring; but if it be a circocsele, the swelling returns with increased size, on account of the return of blood into the abdomen being prevented by the prelusion. See Cooper on Inguinal Hernia.

VARICOSE VEINS. The term varis is applied by surgeons to the permanently dilated flate of a vein, attended with an accumulation of dark-coloured blood, the circulation of which is materially retarded in the affected vessel. When venas are varicoce, they are not only dilated, but they are also evidently elongated, presenting a cylinder larger than natural, irregular, and in several places fluided with knots. They likewise make a variety of windings, and, coiling themselves, form actual tumours from the assemblage of their convolutions in one particular place. The trunk and branches of a vein, thus dilated and elongated, constitute a very distinct swelling, when they are numerous, and confined to a certain part of the body. Indeed, when the dilated vessels are situated near the integuments, the surgeon can feel, and even see the outlines of their tortuous course. These things, for instance, are remarkably obvious in the vena saphena interna, where the affection is particularly common. This vessel may be observed to form in its course several of these swellings, in the interspaces of which it runs in a very serpentine tortuous manner.

Varices are most commonly observed in the lower extremities, reaching sometimes as far up as the abdomen. They have, however, been noticed in the upper extremities, and it is probable that the whole venous system is susceptible of the affection. As a well-informed writer observes, "the great venous trunks sometimes become varicocele. When the diseased vein is situated near the heart, it is attended with pulsation, which renders it liable to be mistaken for aneurism. Morgagni observed that the jugular veins were occasionally very much dilated, and possest a pulsation. (Letter xxi. art. 3, 9, 10, 11.) He also relates a case in which the vena azzygos, for the length of a span, was so much dilated, that it might be compared with the vena cava. The patient died suddenly in consequence of the rupture of this varix into the right side of the chest. (Letter xxv. art. 29.)" A similar case is related by Portal, who also mentions an instance, in which the right subclavian vein was excessively dilated, and burst into the chest. (Cours d'Anatomie Medicales, tom. iii. pp. 354-372.) Mr. Cline des cribed in his lectures the case of a woman who had a large pulsating tumour in her neck, which burst, and proved fatal by hemorrhage. A case proceeded from the internal jugular vein; the carotid artery was lodged in a groove at the posterior part of this face. The veins of the upper extremity very rarely become varicocele. Excepting cases of aneurismal varix, the only instance of this disease with which I am acquainted is mentioned by Petit. (Traite des Maladies Chir. tom. ii. p. 49.) In this case a varix was situated at the bend of the arm; the patient was so fat, that no other vein could be found for the purpose of venesection, which operation Petit repeatedly performed by puncturing this varix. The superficial epigastric veins sometimes become varicocele; but the most frequent seats of this disease are the vena saphena, the spermatic and hemorrhoidal veins."

(See Hodgson's Treatise on the Diseaues of Arteries and Veins, pp. 358, 359.) The deep-seated veins of the extremities seldom become varicocele.

The disease rarely occurs before the adult period of life, and its progress is extremely slow. It is very frequently remarked in pregnant women, who have passed a certain age; but it is particularly unusual for it to happen in young women, even during a series of repeated pregnancies. Surgeons have not hitherto made out any very precise information respecting the places, climates, and kinds of constitution which promote the occurrence of a varicoce enlargement of the veins. Nor has it been well proved, that the disease often proceeds from swellings of the abdominal viscera, or any other species of tumour capable of mechanically obstructing the venous circulation. One or more veins of the same limb are at first most commonly affected with a slight degree of dilatation, without pain, or any sensation of uneasiness. This beginning change ordinarily advances with a great slowness, except in cases where it accompanies pregnancy, in which circumstance one or both the lower extremities, as early as the fifth months, are frequently seen covered with largely dilated veins, or even with tumours formed by an assemblage of varices. The veins gradually become more and more dilated, lengthened, coiled up, and tortuous. The patient then begins to complain of a feaue of heaviness, numbness, and sometimes of very acute wandering pain through the whole of the affected limb. In a more advanced stage, in proportion as the varices increase, and especially when the dilated veins actually form tumours, the limb swells, and becomes more or less oedematous, according to the extent of the diseaue, and the time which it has existed. M. Delpech thinks, however, that the oedema in this cafe is not such as to justify the conclusion, that the increased size of the veins, and the way in which they distend the integuments, produce a mechanical interruption of the function of the absorbent system. For, says he, we meet with, though not often, enormous varices, which are not attended with any swelling of the cellular substance; and we find more frequently fee cafes, in which there is a considerable degree of oedema, while the varices are scarcely remarkable. When the latter have prevailed a long while, and made much
much progress, the coats of the affected veins are not unfrequently thickened, swelled, and indurated, forming a fort of half canal, or fold tube, which has been regarded as an excavation made by the preasure of the varix against the neighbouring bone. But the same phenomena are equally observable, when varicose veins lie at a distance from any bone, against which it can be pressed.

As Mr. Hodgson remarks, "the blood occasionally deposits stringers of coagulum in varicose veins: when this is the case, the vessel is incapable of being emptied by preasure, and is firm to the touch. The deposition does not in general fill the vessel, but, by diminishing its calibre, it retards the flow of blood, and causes the dilatation to increase in the inferior portion of the vein, and in the branches which open into it." (On the Diseases of Arteries and Veins, p. 541.) This gentleman has seen four cafes, in which the coagulum accumulated to such an extent, that the canals of the dilated vesseis were obliterated, and a spontaneous cure was the consequence.

The excessive dilatation of the coats of a superficial vein produces an inflammatory irritation, at first in the adjoining cellular membrane, and afterwards in the integuments. These organs become at first connected together by the adhesive inflammation; and if the dilatation continue to operate, they may at length ulcerate, and burst, and hemorrhage be the consequence. In such cafes, the effusion of blood has sometimes been very considerable; but, says M. Delpech, we have no example of its having proved dangerous. The lyncope following it, or a moderate compression, has sufficed for its stoppage. A more common occurrence than bleeding, is the coagulation of the blood in the cavity of a varicose vein. The veiil then becomes hard and incomprehensible, and it loses that elastic yielding softnefs, which renders it capable of being diminished by gentle preasure. If the parts be already inflamed, Delpech conceives, that the clot in the diseased vein may act as an extraneous body, and bring on ulceration, by the effects of which it is at last brought into view. In this fort of cafe, it is extremely uncommon for hemorrhage to occur; for, in general, the veiil has been already obliterated by the preceding inflammation. But the ulcer itself is very difficult to heal, and may be kept up a long while by the edematous swelling of the limb. Varicose, or rather the edema which is the consequence of them, has the same effect upon every other species of ulcer, and even upon the most simple solution of continuity. While the swelling of the limb cannot be dispersed; while the edges of a solution of continuity are kept afunder by the tenfe flate of the skin; and while the divided parts are irritated by this painful tension; every thing is unfavourable to cicatrization. Thus, we fee the most simple wounds, which have been allowed to suppurate, and ulcers, which should have healed rapidly, continue u.ncured a great many years, merely because the limbs, on which they are situated, are affected with an edematous swelling, the consequence of varices. Such is the condition of things in the cafe which has been improperly named the varicoce ulcer. Delpech Traité des Maladies Chir. tom. iii. fect. 8. art. 3.

In the investigation of the causes of varices, it is usual to dwell very much upon the mechanical obstructions which may affect the circulation of the blood in the veins. Surgeons have thought themselves justified in regarding this as the only cause, because a circular, moderate compression incontestibly retards the course of the blood in these vessels, and produces a temporary dilatation of them. The opinion has seemed also to derive confirmation from the knotty appearance of varicose veins, a circumstance which has been accounted for by supposing, that the dilatation is greatest in the situation of the valves. Lastly, the idea is further supported on the well-known fact of the frequent occurrence of varices during the flate of pregnancy. But it has not been remembered, that the use of garters, for example, is extremely common; but varices of the legs infinitely less frequent; that very large varices are met with in persons who have never employed any kind of ligatures, to which the origin of the complaint can be imputed; that when the dilatation of the veins extends to the thighs and patientes of the abdomen, no causes of this description even admit of sufficion; that varicose veins are observable round several kinds of tumours, especiably fibriui, when there is no possibility of pointing out any mechanical obstruction to the circulation of the blood; that varices sometimes make their appearance at the commencement of pregnancy, and long before the enlargement of the womb can impede the free return of the blood through the veins in the pelvis; that nothing is more unusual than a varicose dilatation of the veins of the lower extremities, in consequence of swellings of the abdominal viscera; and lastly, it has been forgotten that the knots of the dilated veins are far too numerous to admit of being ascribed to the refilience of the valves. It cannot be denied, that preasure applied in the track of the veiils, tends to promote their dilatation; but it can neither be considered as the only cause, nor as the principal one. The foregoing observations made by Delpech, render it probable, that some unknown general cause is concerned in producing varices, the formation of which may also be facilitated by the impediments to the free return of the blood, occasioned by certain attitudes, and particular articles of clothing.

Mr. Hodgson conceives it probable, that in some instances, the valves are ruptured in consequence of muscular exertions, or external violence, in which cafes, the preasure of the column of blood is the first cause of the dilatation of the veins. Sometimes, also, the disease appears to arise from preternatural weaknes in the coats of the veins, as in those instances in which, without any evident cause, it exists in various parts of the same person. Treatise on the Diseases of Arteries and Veins, p. 537.

Experience proves, says Delpech, that there is no certain mode of curing varices, strictly so called, which he thinks cannot be wondered at; since the nature and causes of the disease are completely unknown. The same source of knowledge, however, also proves, that the increase in the dilatation of varicose veins may be retarded, and that the edematous swelling attendant on the complaint may be beneficially opposed. But these effects cannot be produced by refulvent, tonic, astringent applications, nor by aperient, diuretic, and purgative remedies, as some even of the latest writers so inconsiderately assert; but only by means of methodical and permanent compression. When the whole of a limb affected with varices is subjected to this last mode of treatment, the dilated veins subside, the circulation is more regularly performed, and the edema and pain cease. There is not, says Delpech, any better method of healing the solutions of continuity in the soft parts produced or kept up, by the varicose flate of the limb and its consequences. But as soon as the compression is discontinued, the varices make their appearance again, the pain recurs, the edema returns, and the ulcers which were healed break out afresh. Compression, therefore, which absolutely required to be constantly employed, can be regarded only as a palliative, the more useful indeed, inasmuch as the changes which it brings about in the flate of things are nearly equivalent to a perfect cure.
Inflammation of the integuments covering a varix, or varicose tumour, cannot invariably be prevented by compression, nor will this treatment always succeed even in removing the intolerable pain which sometimes attends numerous clutters of varicose veins. In the first case, rest and relaxing applications will often succeed; and in the second, the topical use of sedatives frequently gives relief. It has been proposed to puncture and empty varicose veins; but if a temporary empiema and relaxation of these vessels, which are rendered painful by their distention, could remove the pain for a time, things would fall into the old state again in the course of a few days. If it should appear also, that the clotted blood had the effect of keeping up the unfavourable symptoms, it would be necessary to make a very considerable opening into the dilated vein, in order that the coagulum might be extracted. In such a case, it would be useless to tie the vessel above and below the opening, as has been recommended: the flight of compression is afterwards sufficient for the stoppage of the bleeding, and by the subsequent inflammation the vessel is certain of being obliterated.

We learn from Celsus, that the ancients were accustomcd to remove varices by excision, or destroy them with the cautery. (De Ré Médica, lib. vii, cap. 3.) When the vein was much convoluted, extirpation with the knife was preferred; but in other cases, the dilated vessel was exposed by an incision, and then cauterized. Petit, Boyer, and many surgeons in this country, have also sometimes practised the operation of cutting out clutters of varicose veins.

Delpech remarks, that the extirpation of tumours composed of numerous varices, has been practised either for the purpose of removing the pain in the situation of the diseased, or other inconveniences. This operation has been successfully performed; but it appears also not to have constantly had the effect of preventing the formation of new varices, and it has sometimes proved tedious, difficult, and feverly painful in its execution. In fact, an erroneous judgment must necessarily be formed of the extent of these swellings, when they are judged of only from the appearance which they present under the skin. When we attempt to operate, says Delpech, we may be led to organs which ought not to be meddled with, and a long and extremely painful dissection may be found requisite. Besides, varices are not always confined to the superficial veins, and a relapse would be inevitable. These reflections tend to the conclusion, that operations of this sort should never be undertaken, except when the disease is accompanied with perilous symptoms, or nearly deprives the patient of the use of his limb.

It has been thought, that one of the established principles in the treatment of aneurysms might be advantageously extended to the cure of varicose veins. By tying the principal venous trunk above the point to which the varicose affection reaches, it is said that the course of the blood in the morbid vessels may be totally stopped; the column of this fluid contained in them made to coagulate; and the consequent obliteration of the vessels themselves accomplished.

The practice of tying veins for the cure of varices appears to have been employed in the days of Paré and Dionis, (Cours d'Opérations de Chirurgie, p. 610.) who have accurately described the operation of tying and dividing the vein between the two ligatures. Sir Éverard Home has related many cases of varicose veins in the leg, some of them being accompanied with tedious ulcers, in which, after tying the varisaphena major, where it passes over the inside of the knee, not only the dilatation of the veins of the leg was relieved, but the ulcers were readily healed. This proceeding has unquestionably been sometimes followed with success; but it has also had its failures. Among other evils, an inflammation of the tied vein has been observed extending very far in the vessel, and succeeded by convulsions and death. Indeed, the dangers arising from an inflammation of the internal coat of the veins are now generally acknowledged, and every endeavour should be made to avoid them. A cafe which lately happened in one of the large hospitals of this metropolis, has fully proved them: we allude to the example, in which the femoral vein happened to be wounded in the operation for aneurysm, and had a ligature applied round the small aperture accidentally made in it. Inflammation of its internal coat took place to a considerable extent, and the patient is supposed to have died of the indisposition resulting from it.

As Mr. Brodie observes, it seems to be now established by the experience of modern surgeons, that a mechanical injury inflicted on the trunk of one of the larger veins, is liable to be followed by inflammation of its internal membrane, and a fever of a very serious nature; and the occasional occurrence of these symptoms after the ligature, or even the simple division of the varisaphena, has made surgeons less confident than formerly, of the propriety of attempting these operations for the relief of a varicose state of the branches of that vessel in the leg. Certain reflections, however, induced Mr. Brodie to think, that the same ill effects would not follow a similar operation performed on the branches themselves. "Where the whole of the veins of the leg are in a state of morbid dilatation, and the dilects produced by the disease is not referred to any particular part, there seem to be no reasonable expectations of benefit, except from the uniform preflure of a well-applied bandage. But not unfrequently, we find an ulcer which is irritable, and difficult to heal, on account of its connection with some varicose vessels; or without being accompanied by an ulcer, there is a varix in one part of the leg, painful and perhaps liable to bleed, while the veins in other parts are nearly in a natural state, or at any rate are not the source of particular uneasiness. In some of these cases, I formerly applied the caustic panth, so as to make a slough of the skin and veins beneath it; but I found the relief which the patient experienced from the cure of the varix, to afford but an inadequate compensation for the pain to which he was subjected by the use of the caustic, and the inconvenience arising from the tedious healing of the ulcer, which remained after the separation of the slough.

"In other cases, I made an incision with a scalpel through the varix and skin over it; this destroyed the varix as completely as it was destroyed by the caustic, and I found it to be preferable to the use of the caustic, as the operation occasioned less pain, and as, in consequence of the being no loss of substance, the wound was cicatrized in a much shorter space of time. I employed the operation, such as I have described it, with advantage in several instances; but some months ago I made an improvement in the method of performing it, by which it is much simplified, rendered less formidable, not only in appearance, but also in reality; and followed by an equally certain, but more speedy cure.

"It is evident," says Mr. Brodie, "that the extensive division of the skin over a varix, can be attended with no disadvantage. On the contrary, there must be a disadvantage in it, as a certain time will necessarily be required for the cicatrization of the external wound. The improvement to which I allude consists in this; the varicose vessels are completely divided, while the skin over them is preserved entire, with the exception of a moderate puncture, which is necessary for the introduction of the instrument with which the incision
incision of the veins is effected. Thus the wound of the
internal parts is placed under the most favourable circum-
stances for being healed, and the patient avoids the more
tedious process, which is necessary for the cicatrization of a
wound in the skin above.

"For this operation, I have generally employed a narrow
sharp-pointed bistoury, slightly curved, with its cutting-
edge on the convex side. Having ascertained the precise
situation of the vein, or cluter of veins, from which the
diseases of the patient appears principally to arise, I intro-
duce the point of the bistoury through the skin on one
side of the varix, and pass it on between the skin and the
vein, with one of the flat surfaces turned forwards, and
the other backwards, until it reaches the opposite side. I then
turn the cutting-edge of the bistoury backwards, and in
withdrawing the instrument, the division of the varix is ef-
fected. The patient experiences pain, which is occasionally
severe, but subsides in the course of a short time. There
is always hemorrhage, which would be often profuse if
neglected, but which is readily stopped by a moderate
pressure, made by means of a compress and bandage care-
fully applied." Mr. Brodie particularly enjoins the neces-
sity of keeping the patient quietly in bed for four or five
days after the operation, and removing the bandage and
first dressings with the utmost care and gentleness. He also
cautions surgeons not to make the incision more deeply
than absolutely necessary. Inflammation of the coats of the
veins has not occurred in any of the cases in which Mr.
Brodie has adopted this method of treatment. This
gentleman wishes it to be understood, however, that he does
not recommend the practice indiscriminately, but with a
due attention to the circumstances of each individual case.
"The cases for which it is fitted, are not those in which
the veins of the leg generally are varicose, or in which
the patient has little or no inconvenience from the complaint;
but those in which there is considerable pain referred to
a particular varix; or in which hemorrhage is liable to
take place from the giving way of the dilated vessels; or
in which they occasion an irritable and obstinate varicose

On the subject of cutting through veins affected with
varix, it is proper to observe, that even this plan has been
known to bring on severe and fatal symptoms. Cases con-
firming this fact are recorded in a valuable modern work,
which should be in the hands of every practical surgeon. (See
Hodgson's Treatise on the Diseases of Arteries and Veins,
p. 555, et seq.) It is but justice to flate, however, that
in these examples, Mr. Brodie's manner of doing the oper-
ation was not adopted.

As we have already noticed, cases of spontaneous varix in
the veins of the arm are rarely observed. When these
vessels become varicose, it is almost always in consequence of
a communication being formed, in the operation of vena-
dication, between the brachial artery and one of the veins at
the bend of the arm. The superficial veins in this situ-
ation then become more or less dilated by the impulse of the
stream of arterial blood which is thrown into them. There
is, however, a good deal of difference between those acciden-
tal varices actually induced by a mechanical cause, and
those which originate spontaneously, or from causes not
very clearly understood. The former never acquire the size
which the latter often attain; they never exceed a certain
magnitude, whether preasure be employed or not; they
never form tumours composed of an assemblage of varicose
veins; they are never filled with tough coagula of blood;
their coats are never thickened, nor constitute the solid
half canal remarked in the other species of varices; the
skin which covers them is not disposed to inflame and ul-
erate; they are not subject to occasional hemorrhage; and
the limb is not affected with any edematous swelling.
(See Delpech Traité des Maladies Chim. tom. iii. p. 261.)
These circumstances must render it sufficiently evident that
all surgical interference in such a case would be entirely
unnecessary.

For additional observations connected with the subject of
varicose veins, see the article ANEURISM, where the aneu-
rismal varix is described; CIRROCELE, where the varix of the
spermatic cord is treated of; HEMORRHOIDAL, where the
diseased and enlarged veins of the rectum are considered;
and WARTIECELE, where those of the scrotum are noticed. Del-
pech Précis Élementaire Des Maladies reputées Chirur-
gicales, tom. iii. Hodgson's Treatise on the Diseases of
Arteries and Veins. "Cooper's Dictionary of Practical
Surgery.

VARICOSE ULCER. See the preceding article, and ULCERS.
VARICOSE, or Varicous, a term applied to a kind of
soft pulpy swelling, or particular sort of ulcer in animals,
mostly about the legs. See ULCERS, in Animals.

VARICULA, (diminutive of varix,) in Surgery, a vari-
cose enlargement and dilatation of the veins of the tunica
conjunctiva of the eye; a frequent consequence of chronic
ophthalmia.

VARIEAS, in Geography, a town of Portugal, in the
province of Beira; 14 miles S.E. of Lameg."
making shoots of extraordinary vigour, which soon overtop and exclude the variegated parts of the same individual.

VARIETIES, in Natural History, a word used to express an accidental change in some body, which is not essential to it, and therefore does not constitute a different species.

The naturalists of former ages have run into great errors, in mistaking the accidental varieties of plants, animals, and minerals, for distinct species. Many of them have called a plant a new species, because its flower, which should have been blue or red, is white, on account of the poorness of the soil, or some other such reason. Mr. Ray has established a very good test for varieties in botany; he allows every thing to be a distinct plant, which will propagate itself in its own form by its seeds; but such as, when sown, lose their difference, and run back to the old standard, he accounts varieties, however great their distinctions may appear.

In the history of fish, as much confusion has been introduced, by mistaking varieties for distinct species, as in botany. Arctedi is the only author who has rationally attempted to bring this part of natural history into order in this respect, and to settle regularly the rules by which to distinguish real and essential from accidental differences.

The principal grounds of the error of supposing varieties distinct species of fish have been these: the variable and inconstant colour of fish hath been mistaken for a specific difference; in this manner Rondeletius has defcribed many varieties of the turdi, labri, and other fish, under the names of distinct genera.

Others have paid the same too great regard to the more constant varieties of colour, which are found only to differ in degree in the several individuals of the same species, and their differences to be only in the degrees of the same colour, which is much more intense in some, and more remiss in others. These differences can only make varieties of the same fish, the species remaining always the same. Of the same kind are the mistakes of those who esteem size or magnitude a specific character; and thus, out of the varieties of the same fish, occasioned by scarcity or plenty of food, or other such occasions, make larger or smaller species.

The place where fish are caught is also another cause of making new species with these authors: thus, though the perca fluviatilis of Bellonius, and the perca marina of other authors, be the same fish, yet they are pretended to be different species. The time of spawning is also with some made a distinction of species; and thus we find the common pike divided into three species, according to its spawning, in spring, summer, and autumn, which it does according to the heat or coldness of the climate. See Specific Names.

All these differences are false and frivolous, and the utmost they can do is to make what are properly called varieties, though few of them are sufficient even for that. A salmon caught at sea is not different from one of the same brood caught in a river; and if the perca marina, falsely so called, be a little different from the perca fluviatilis, yet if its spawn will produce regular perca fluviatilis, its difference can only amount to a variety, not a distinct species.

The time of spawning is no essential difference; for we daily see the change of climate make changes of that kind in all creatures; and even in the same climate, and under the same circumstances, the same species of birds will afford some individuals much earlier or later in laying their eggs than others. Artedi Ichthyol.

VARIETIES, in Botany and Vegetable Physiology, are certain differences between individuals of the same species, which are not sufficiently important to constitute a specific distinction, nor, however important or striking, are they permanent, except in offsets, buds, cuttings, or layers of the same individual. Even these are observed, sooner or later, to wear out; while, on the other hand, some varieties do appear to be continued, by seed, through successive generations, at least in annual plants; but a very slight degree of observation will shew that these gradually return to their original nature; sometimes very speedily. Varieties amongst edible fruits seem to be the most numerous and the most lasting; but whether they are more so than others, which, being unimportant to mankind, pass unnoticed, as in the Fungus tribe, may be doubted. Mr. Knight, the learned and experienced President of the Horticultural Society, has convinced himself, and we believe most of his intelligent readers, that varieties of Apples and Pears have only a limited duration. (See Species of Plants.) Thus the most valuable, perhaps, of all, the Golden Pippin, and particularly the rufted-coated kind of that fruit, is generally wearing out. It may be propagated by grafting; but the young trees, thus obtained, quickly canker, and cease to bear any fruit worth notice. Numbers of Apples and Pears, celebrated in the horticultural works of the French, and many known to have existed formerly in England, are no more to be found. Those who plant orchards draw out admirable plans upon paper, buy trees, and wait with great complacency for the produce, till they find themselves miserably deceived. Half their trees, possibly, bear something different from what was promised. So far they have a right to complain of an ignorant, careless, or diabolical nurseryman. The greater part of their whole stock, whether the fruit be good or bad in quality, canker and die, or dies, in a few years. Some few hardy trees only, of ordinary fruits, perhaps remain. The foil is concluded to be unfit for apples, and the polleffor bears his disappointment as well as he can. This is the literal history of several orchards, which have passed under our observation. We have also seen fine trees of Golden Pippins and Nonpareils, which twenty years ago bore full crops of excellent fruit, canker and die, without any apparent cause, so that "the places which knew them, know them no more." Such is the melancholy history of our orchards. But it is still more grievous to observe, that new varieties, which Mr. Knight, and some other patriotic cultivators, are obtaining every year from seed, prove far more transient than their predecessors, canker and disappearing in four or five years. Some, however, we hope and trust, will remain, and that our descendants will not be defitute of the most valuable of all English fruits. With this important end in view, we cannot sufficiently recommend, to those who have the means, the raising of apple-trees from seed, every year, on a large scale. It has usually been the practice of such experimentals to select the kernels of good apples, for their purpose; thinking such more likely to yield something analogous to their parent fruit. Perhaps they may inherit too much of the same constitution, and this may be the latent cause of their own short existence. Might it not be worth while to sow the seeds of healthy wild crab-trees, whose vigour might remain in their offspring? From such, doubtless, all our valuable varieties must, at first, have originated. Who can tell that the degeneracy so prevalent among the new-raised stocks, as to duration, may not be owing to the repeated crofs impregnation of diseased wrought-out varieties, which must take place in a garden? The ornaments of our courts and drawing-rooms may descend from the heroes of Crofley and Agincourt, but our modern heroes commonly rise from the ranks, and the quarter-deck.

In the ornamental department of horticulture, varieties
VARIETIES.

are much attended to. Cape Geraniums are raised, by crofs impregnation, which often excel their parents in size and beauty, and for a while are continued by cuttings, if not by seed. Nothing, however, can be more tranitory than these ephemeral productions. We have adverted to some of them under the article Pelargonium. Double-flowered varieties are produced from time to time, either by nature or by some accident of cultivation, for which we cannot in any manner account. Thus, if we sow an hundred seeds of the common Annual Stock, Cheiranthus annuus, one, or perhaps many, of the plants may bear nothing but completely double flowers, all the rest being quite single. When such a variety occurs in any perennial, or shrubby, species of plant, it is justly prized, being capable of multiplication by cuttings, layers, &c.; and when variations of colour are superadded, as in the favourite Camellia japonica, the treasures of the conservatory are still more multiplied. We must be content, in the present state of knowledge at least, to seize each vegetable Proteus as it comes in our way, without attempting to explain, or to imitate, the cause of its transformation.

Colour is, of all things, most liable to vary in the petals of flowers. Almost every blue flower is capable of changing to white, and it appears that in several instances the seeds of the white variety more generally produce their like, than those of the natural-coloured flowers change to white. But this rule is not invariable. The seeds of Canterbury Bells, Campanula Medium, whether taken from a white or blue flower, appear, as far as we can judge, to produce a great majority of blue-flowered plants, with a few white ones. The elegant varieties of the Sweet Pea, Lathyrus odoratus, seem more constant; but they are comparatively of recent introduction amongst us, and it is probable they may in time wear out, like other more short-lived beauties.

Varieties in the luxuriance or flavour of annual herbs, or their seeds, which make the riches of a kitchen garden, require, of all things, the most affidious attention of a cultivator. These are the most casual and fugacious of all things. They do, however, appear to be more within the control of a skilful gardener, than many above-mentioned; especially with regard to soil, or manure. An eminent London seedman assured the writer of this, that he found it expedient to fend lettuce seed to a remote country, the south of France, for instance, one seafon, and its produce to Holland, or Germany, perhaps, the next, in order to preserve or improve its quality. Change of crops every body knows to be essential in farming, as well as change of seed. What are the various degrees of excellence in Wheat, Barley, or other grain, but varieties, in what possibly, when originally wild, refembled but an ordinary grafs. Thefe excellencies are kept up by culture, that is, by attention to the circumstances just detailed. Such attention is infinitely more requisite in the cultivation of high-fed, pampered, and delicate culinary vegetables, which, if at all neglected, soon return to their original kind, or more frequently vanifh altogether. Varieties of Peas, obtained by crofs impregnation, are a late improvement in horticulture, which promises a more durable success. For this acquirement to our tables we are indebted to the skill and indefatigable exertion of Mr. Knight, who has also extended his philosophical inquiries and experiments to Strawberries. It is much to be wished that the test of divifion between a variety and a species, which this gentleman has affumed, or rather adopted from animal physiologists, may hold good. This is, their power of generating together, without limitation. That unqueftionably different species in the vegetable king-
VARIETIES.

VARIETIES, in Gardening, the different variations of 
plants of the same general nature from that of the parent 
or particular fort from which they came. They are, of course, 
the offspring of certain peculiar determinate forts, which 
vary in some accidental particular of their habits of growth, 
or some other circumstance, from the natural original fort, 
or parent plant. But although this is the case, as their 
variations are, for the most part, confined to some particular 
part or parts, they still retain the specific mark or marks of 
differentiation of the parent plant, which differentiates them 
from those of other different forts. Consequently there are 
frequently numerous varieties from the same fort, all of 
which differ from it, either in their manners of growth, 
foliage, flowers, the economical qualities which they possess, 
or some other particular of a similar nature. All kinds of 
plants, both of the annual, biennial, and perennial descriptions, 
as well as those of the herb and tree fort, are liable to 
vary in this way. This is effected by different modes and 
kinds of culture, by the nature of the climate, by that of 
the soil, by the use of particular forts of manure and other 
materials, by frequent changes in their situation, by age, 
and in many other methods, and respects their differences in 
size and magnitude, their luxuriant, dwarfish, erect or 
trailing growths, their being smooth or prickly; the nature and 
shape of their leaves, as broad, narrow, entire, divided, 
curled, spotted, variegated, round, oval, sharp, blunt, &c.; 
smooth, hairy, downy: in their flowers, as single, double, 
proliferous, white, red, blue, yellow, variegated, &c.: in 
their smell, as sweet-scented, rank-scented, &c.: also in the 
form, size, colour, taste, quality, &c. of the fruit; in some 
cases, as round, oval, oblong, smooth, furrowed, warty, 
hairy, downy, large, small, red, green, yellow, variegated, &c.: 
in their smell, as sweet-scented, rank-scented, &c.: also in the 
shape and appearances of the roots, as in the carrot, the 
radish, the turnip, the potato, &c.: in the manner of 
their producing their seeds, fruits, &c.; as in the hop, 
spinach, hemp, &c.; and the cucumber, melon, &c. And 
it takes place in many other circumstances.

However, notwithstanding these different modes of variation 
in the particular parts of the varying plants of a 
peculiar fort, if those of each such fort still maintain the 
same specific mark of differentiation as that which characterizes 
and differentiates the respective natural forts from all others, 
it shews them all the offspring, or varieties, of the same 
original fort. For as every different and distinct fort, in 
any particular kind of plants, is discriminated from some 
peculiar, uniform, constant mark or appearance in some 
part of its growth, all the plants of the same particular kind 
unchangeably bearing exactly the same, are, notwithstanding 
their accidental variation in other parts of their growth, all 
varieties of one fort. Consequently all the plants which 
are produced from the seed of the same particular fort, 
however they may put on different forms and appearances, 
are to be considered as the real varieties of it.

The difference between any particular fort and that of 
a variety, is, that a really true fort, raised from seed, will, 
though it may sport into many variations, still retain and 
keep its true and invariable mark of differentiation through 
all its varieties; and although there may be varieties of that 
particular fort with different sized leaves, and colours of 
the flowers, &c.; if the seed of any one be sown, it will 
probably produce young plants of all these kinds, each 
having the characteristic discriminating mark of the parent.

It is, indeed, in a great measure, from plants of the 
feeding kind, that the different varieties of particular forts 
were first obtained, as in the case of the auricula, polyanthus, 
&c. each being a distinct fort of the same kind, and 
each of which consists of innumerable varieties, in the colours 
and variegations of the flowers, still gained in this way, 
the seed of the same plant often producing a great diversity in 
this respect, each variation of colour, &c. forming a real 
variety; but probably not one of them with a flower 
exactly like that of the original parent plant: yet each 
variety retains the specific difference of its respective 
particular fort, the auricula, for instance, never changing to 
the polyanthus, nor that to the auricula, but the varieties 
of each keep their proper differentiation; as the auricula, in all 
its varieties, continues its smooth finely serrated leaves; 
and the polyanthus, its rough-toothed leaves. And the same 
is the case with the carnation, the ranunculus, the anemone, 
the tulip, and a great number of other flower-garden plants.

The tree kind, especially those for the production of fruit, 
are particularly disposed to form varieties, equally in their 
modes of growth, their foliage, and the fruit: for instance, 
one original fort of apple-tree is only admitted, but which 
furnishes an almost endless variety of fruit, in regard to 
shape, size, colour, taste, quality, &c. as well as in the 
growth of the trees, so far as respects their size or magnitude, 
the dimensions and colours of the foliage, &c.; the 
specific differentiation of which is, serrated leaves, and clove- 
futing flowers in the form of an umbel, which runs through all 
the numerous varieties, however different the trees may be 
in size, growth, leaves, and fruit. And the same takes 
place in the pear, the plum, the common cherry, the peach, 
and many others, there being only one principal fort of each 
of these, but the varieties of the fruit are many in number, 
which, in all these sorts of trees, were originally obtained 
from feeding plants, that is, such trees as were raised by 
setting the fleshes or kernels of the fruit. Almost all the 
fruit-tree kind sport greatly in their feeding plants, so that 
out of hundreds of trees raised from the seeds of the best 
fruits, very few, if any, will produce fruit exactly like that 
of the parent plant, or which posses any good perfection.

Therefore, on account of the uncertainty of producing and 
continuing the approved sorts of fruit from feeding plants, 
recourse is constantly necessary to be had, in the practice of 
gardening, to the modes of grafting, budding, and, in some 
instances, the making of layers and cuttings, in order to 
propagate the intended and desired sorts, or to continue 
and increase any good newly acquired variety.

The greater number of varieties in herbaceous plants, as 
well as many kinds of fruit and other trees, are of a variable 
and sportive nature, so that when raised from seed, there is 
no dependance on having the feeding plants coming again of 
the same fort, but varying into different sorts of one another. 
In cases of this nature, the propagation of such of them as
are perennial, to continue them with certainty, is to be accomplished either by means of planting their suckers, or the offsets or slips of the roots, and in some by layers and cuttings, or in the woody descriptions by layers, cuttings, grafting, and budding; but in the annual tribe there is no other means than by sowing or setting the seed, except in some few forts, by the planting of their cuttings, as in the chrysanthenum, nauturium, and some others; however, in a great number of kinds, where particular attention has constantly been bestowed in sowing the seeds from only the most perfect, they will continue tolerably permanent, and frequently come again the same, or with but very little variation.

In many sorts of plants of the kitchen-garden and annual flower kind, though there be a number of varieties in each, yet by good care, and constantly sowing seed from the most perfect plants, which show no signs of degenerating, they remain, year after year, permanent from seed.

But most of the perennial tribe, the herbaceous as well as the woody sorts, as being in general more variable from seed, afford great opportunities of continuing the permanency of any particular variety, by making use of the offsets from their roots, the suckers, layers, and cuttings, as well as by grafting and budding, as has been already seen.

It sometimes occurs, however, that plants, although not immediately raised from seed, will, on account of some accidental cause, vary materially from their usual natural growths, and assume quite different appearances, arising in consequence either of culture, climate, exposure, soil, age, disease, abundance, or deficiency of nourishment, contusions, or other similar circumstances; and by such means produce accidental varieties in some particular parts of their growth.

The ascertaining of the reality of the varieties is, in many sorts, readily and easily accomplished by a comparison of the variable plant with the specific distinctions of the natural sort; and the variations of growth of the variety with the same parts in the natural plant. But still there are many varieties that require all the skill and knowledge of the most expert gardener to fully distinguish and ascertain them. It is, however, of material importance, in many cases of practical gardening, to have a nice and correct notion of the varieties of the plants which are to be cultivated, as the work can thereby be performed with greater certainty and advantage, as well as with more and better effect.

In the first volume of the Transactions of the Horticultural Society, T. A. Knight, esq., makes the following conclusions on the means of raising new and early varieties of fruits: after stating that "variation is the constant attendant on cultivation, both in the animal and vegetable world," and that "in each the offspring are constantly seen, in a greater or less degree, to inherit the character of the parents from which they spring," that as every particular sort of fruit acquires its greatest rate of perfection in some peculiar sort of soil or situation, and under some similar mode of culture; the proper choice of such "must be the first object of the improver's pursuit; and that nothing should be neglected which can add to the size, or improve the flavour of the fruit which it is intended to propagate. Due attention to these points will, it is contended, in almost all cases, be found to comprehend all that is necessary to introduce the introduction of new varieties of fruit, of equal merit with those from which they spring,"; but that, at the same time, "the improver, who has to adapt his productions to the cold and unsteady climate of this country, has still many difficulties to contend with; he has to con-
more often indebted to accident than to any plan of systematic culture; and contents himself with merely selecting and propagating from the plant of the earliest habits, which accident throws in his way, without inquiring from what causes those habits have arisen; and few efforts have been made to bring into existence better varieties of those fruits which are not generally propagated from seeds, and which, when so propagated, of necessity exercise during many years the patience of the cultivator, before he can hope to see the fruits of his labour, industry, and attention."

The attempts which the writer has made to produce early varieties of fruit are, it is believed, all that have yet been made; and though the result of them is by no means sufficient decisive to prove the truth of the hypothesis he is endeavouring to establish, or the eligibility of the practice he has adopted, it is amply sufficient to encourage future experiments on the subject.

It is noticed, that the first sort of fruit which was subjected to experiment in this way, was the apple; some young trees of the desired varieties of which for propagation were trained to a south wall, until they afforded buds containing blossoms. The branches of which then, in the following spring, were detached from the wall, and removed to as great a distance from it as possible, in which state they continued till so far advanced in their blossoms in the following spring, as to be in danger from fruit. Then the branches were trained to the wall, where each blossom allowed to remain quickly expanded, and formed fruit, that in a few months attained perfect maturity; and the seeds produced plants that have ripened the fruit much earlier than other trees raised at the same time from seeds of the same fruit grown in the orchard. In this trial, the blossoms of each variety were fecundated by the farina of another kind; from which is supposed to have been attained in this as well as other similar instances a greater vigour and luxuriance of growth; but no earlier ripening of the fruits than in the plants grown by the ordinary modes of culture. The early maturity of those mentioned, is consequently ascribed to the other peculiarities of circumstances under which the fruit and seeds ripened from which they sprang.

By the same method of culture, several new varieties, that are the offspring afforded by the Siberian crab and the richly-apples of this country, were obtained in the intention of providing fruits for the press that might ripen well in cold and exposed situations. The plants furnished in this manner posses, a remarkable hardiness and luxuriance of growth, appearing in every way perfectly suited to answer the intended purpose. In each of these trials, some of the new varieties inherited the character of the male, and others of the female parent, in the greatest degree; and of some varieties of fruit, especially of the golden pippin, a better example was obtained by the introduction of the farina into the blossom of another apple, than by frowing their own seeds. The new variety of the Downtown pippin, obtained in this manner from the farina of the golden pippin, will, it is believed, be found, in a favourable feason and situation, little if at all inferior to the golden pippin, when first taken from the tree; but it is a good deal earlier, and probably cannot be preferred so long in a perfect state.

The next trials were on the grape, which, though less successful than the above in producing new varieties, were not less favourable to these conclusions. After supposing a vineyard without fires in the winter, to afford a climate to the vine similar to that afforded by the southern parts of Siberia to the apple or crab-tree; the same extensive variation of temperature taking place in it, and the sudden transition from great comparative cold to excessive heat, as productive of the same rapid progress in the growth of the plants and the advancement of the fruit to maturity; he states that his first attempt was to combine the hardiness of the blossom of the black chuckler, or Burgundy grape, with the large berry and early maturity of the true sweetwater, often confounded with the white chaffelas and white muscadine. In this case, the seeding plants produced fruit in his vineyard at the age of three or four years, and in some of them it was very early; but the bunches were short and ill-formed, and the blossoms did not set by any means so well as he had expected.

On substituting the white chaffelas for the sweetwater, many varieties were obtained whose blossoms appeared perfectly hardy, and capable of setting well in the open air; and the fruit of some of them ripening a good deal earlier in the year than that of either of the parent plants. But the berries are smaller than those of the chaffelas, having fewer tender and delicate skins: and though not without much merit for the dessert, they are generally better calculated for the press. In the latter intention, in a cold climate, it is supposed that one or two of them possess the greatest excellence. From the white chaffelas and sweetwater, plants have since been obtained, the appearance of which is greatly more promising; and the earliest variety of the grape he has ever yet seen was produced from a seed of the sweetwater, and the farina of the red Frontignac. It is a very fine grape, resembling the Frontignac in colour and the form of the bunch; but it is feared that its blossoms will prove too tender to succeed in the open air in this country; a single bunch consisting of a few berries is, however, all that has yet existed of this kind. Two new varieties of the grape, with striped fruit and variegated autumnal leaves, have also been produced from the white chaffelas and the farina of the Alupi vine: one of these has ripened extremely early, and is thought a good grape. As in all attempts to obtain new varieties of fruit, the propagator is at a loss to know the kind which are best suited to answer his purpose, those varieties of the grape which he has employed with the most success are mentioned. In short, the facts which he has obtained on this subject, leave no doubt in his mind that varieties of the grape capable of ripening perfectly in our climate, when trained to a south wall, as well as of other fruits better suited to this climate than those which are now cultivated, may be readily produced; but whether the method of cultivation which he has adopted and advised be the most eligible, must be left to the decision of future and more extensive practice and experience.

Trials similar to these have been made on the peach; but it is stated that nothing more can yet be said of the result of them, than that the plants are perfectly healthy and luxuriant in their growth, affording sufficient evidence in their leaves of the good quality of the future fruit. And though he is uncertain at what age plants of this sort become capable of producing blossoms, the sudden changes in the character of the leaves and growth of those raised by him, which are now in their third year, lead him to believe that they will be in a state to produce fruit at the age of three or four years.

Upon the whole, from these and a close attention to the subject for years, it may be maintained that new varieties of every particular sort of fruit will in general be better obtained from the introduction of the farina of one variety of it into the blossoms of another, than by propagating from any single kind. Where trials of this nature are made between varieties of different size and character, the farina of the
VARIETIES.

the smaller kind should be introduced into the blossoms of the larger, as under these circumstances it has generally, though with some exceptions, been found that there is a prevalence in the fruit of the character of the female parent, probably on the following account. The seed-coats are wholly generated by the female parent, and these regulate the bulk of the lobes and pedicells; and it has been noticed, in raising new varieties of the peach, that when one flower contained two seeds, the plants these afforded were inferior to others. The largest seeds, procured from the finest fruit, and from that which ripens most perfectly and most early, should constantly be chosen. When it is intended to propagate new varieties in this manner, it will be necessary for the gardener to extract the stamina of the blossoms from which he purposes to propagate some days before the farina begins to dry. After young trees have riven from seed, a certain time must elapse before they become capable of bearing fruit, which, it is believed, cannot be shortened by any means of cultivation. Pruning and transplanting are equally hurtful, and no alteration in the character or merits of the future fruit can be effected during this length of time, either by manure or any sort of culture. The young plants should be suffered to extend their branches in every direction, in which they do not interfere with each other in a hurtful manner; and the soil must be kept sufficiently rich to promote a moderate degree of growth, without exciting the plant to a premature exertion, which constantly brings on diseases. The soil of an old garden is particularly destructive in this way. The length of time that different sorts of fruit-trees require to attain the age of puberty, admits of great variation. The pear demands from twelve to eighteen years; the apple, from five to twelve or thirteen; the plum and cherry, from four to five years; the vine, three or four; and the raspberry, two years. The strawberry, if its seeds be sown early, affords an abundant crop in the following year; and he has produced several new and excellent varieties of this fruit; but the half-blow strawberry does not seem to propagate readily with the other varieties, possibly belonging to an original distinct sort. He has, however, obtained several offspring from its farina; but they have all afforded a feeble and abortive blossom, and been of little value.

In another paper in the same volume, the same writer, in speaking of raising new and early varieties of the potato, says that those who have cultivated early varieties of this plant, must have noticed that they never afford seeds or even blossoms, and that the only mode of propagating them is by the division of their tuberous roots. Altogether, that each variety has been found by experience, when long propagated, to gradually lose some of those good qualities which it possessed in the early stages of its culture; the duration of a variety in the state of perfection, being limited to about fourteen years. A good new variety of an early potato is, of course, considered highly valuable by the person who raised it; and as such early varieties, according to any method of culture heretofore practiced, can only be gained by chance from seeds of late kinds, they are not very frequently produced. But by the method here directed, seeds are readily obtained from the earliest and best varieties; and the seeds of these may possibly, in successive generations, finally afford much earlier and better varieties than have yet appeared.

The cause of the constant failure of the early potatoe to produce seed has been suspected, and found to be the premature early formation of the tuberous root, which draws off for its support that portion of sap, which in other plants of the same sort affords nutriment to the blossoms and seeds.

After taking several methods of placing the growing plants so as readily to prevent this, he found the following to be the best. He fixed strong stakes into the ground, and raised the mould in a heap round the bases of them, in perfect contact with their bottom parts; and then planted on their south sides the potatoes from which seeds were defied. As soon as the young plants were about four inches high, they were fastened to the stakes by means of lead and nails, and the mould washed away, by a strong current of water, from the bases of their stems, so that the fibrous roots only of the plants entered into the soil. As the fibrous roots of this plant are perfectly distinct organs from the runners, which give existence and subsequently convey nutriment to the tuberos roots; and as the runners spring from the stems only of the plants, which are, in this mode of culture, placed wholly out of the soil, the formation of tuberos roots is easily prevented. Whenever this is therefore done, numerous blossoms will soon appear, and almost every blossom will afford fruit and seeds. It is also suggested as not improbable, that by introducing the farina of the small and very early varieties into the blossoms of those of larger sizes, and somewhat later habits, moderately early varieties, adapted to field culture, and winter use, may be obtained, the value of which to the farmer in the colder parts of the kingdom, whose crops are of this root are followed by one of wheat, would be extremely great.

It is likewise stated by Mr. Biggs, in the above work, that the different varieties of the apple-tree may be raised in a ready manner by means of cuttings, and that the trees so produced, "from healthy one-year old branches, with blossom-buds upon them, will continue to go on bearing the finest possible fruit, in a small compass, for many years. Such trees are also peculiarly proper for forcing, by way of curiosity or luxury, and, it is believed, that they are less liable to canker than when raised by grafting. This has been more than once experienced in the golden pippin, cuttings of which have remained seven years in perfect health, when grafted, taken not only from the same tree, but from the very branch, part of which was divided into cuttings, cankered in two or three years. This mode of raising young apple-trees was discovered by accident, from flicking cuttings of these kinds of trees into the ground, as flower-marks during the wet season, which took root.

In raising new varieties of carnations, much advantage has lately been found from ripening the feed of the old plants by means of placing them in the artificial heat or warmth of some sort of hothouse, frame, or other contrivance of these kinds, as they naturally flower late in the season, and, of course, fully ripe feed can seldom be procured in that way for the purpose.

VARIETIES OF LAND, IN AGRICULTURE, the different sorts or qualities of it, as they relate to the nature and manner of its cultivation, or the uses to which it is applied. Though no general principles are probably yet capable of being laid down in regard to the comparative value or utility of different sorts or plans of cultivation, or of the different methods of proceeding in respect to crops that are had recourse to in different cases and situations, as the real nature of it, and the particular circumstances to which it is exposed and liable, in every instance, are not sufficiently known; it is evident that all the sorts of clofe, field, and fallow sorts of land are not so greatly benefited by much working over, as those of the finest and cohefive kinds, in which minute division of their parts and full aeration are essentially necessary,
necessary, effects which are produced in the most extensive manner, under the drill practice of culture; but the labour, trouble, and expenditure attending its use, in some cases, may not be adequate to its benefits. Thus, the former and all the dry and least moist forts of land are commonly well fitted for the purposes of tillage and those of sheep-patuheit; while the latter and those of the more wet and retentive kinds are more fitted to the raising broad-leaved crops, and those of the artificial and natural grafts forts. Stiff clayey or alluvious lands are mostly best suited for wheat crops, and those of the lime-stone or calcareous descriptions for producing saffron and clover crops. The varieties of land, too, are considerable, as they relate to different practices, such as those of draining, watering, and many others.

See Soil, Spring and Surface-Draining, Tillage, and Watering of Land.

VARIGNON, Peter, in Biography, was born at Caen, in France, in 1564, and originally intended for the church; but imbibing an early taste for the mathematics, this kind of science became the object of his attention, in the prosecution of which he was discouraged by his relations, who obliged him to devote some part of his time to theology. With the abbe St. Pierre, who studied philosophy in the famous college, he formed an intimacy; and they mutually encouraged and aided each other in their favourite studies. The abbe took him to his house, and in order to render him more independent, bestowed upon Varignon out of his own income, which was only 1800 livres a-year, 300. In 1686 the abbe took him to Paris, where he wholly employed himself in the study of mathematics, and where he formed an intimacy with Du Hamel, Du Verney, and De la Hire. From Du Verney he acquired a considerable knowledge of anatomy, whilst in return he taught him the application of mathematical reasoning to that subject. In 1687 Varignon became known by his "Projet d'une nouvelle Mechnanique," dedicated to the Academy of Sciences. This treatise was much admired, and served to introduce him to two considerable places, viz. that of geometrician to the Academy of Sciences, and that of professor in the college of Mazarine. In 1690 he published "Nouvelles Conjectures sur la Pendante;" and he became one of the most early cultivators of the science of infinitesimals. Of his application and industry we have ample evidence in the volumes of the Academy of Sciences; his papers are numerous, and contain complete theories on the laws of motion, central forces, and the refraction of different media. In 1703 he suffered much from his intense application, which impaired his naturally strong constitution, and reduced him for three years to a very languishing state. His physicians prohibited study, from which, however, he could not totally abstain. Having conferred Dr. Wallis for affecting that there are certain spaces more than infinite, ascribed by this celebrated geometer to hyperbolas, whilst Varignon maintained that they were finite, his criticalism was shewn to M. Carré, and by him cauful to be printed in the Memoirs of the Academy, without his knowledge. After his recovery, he refounded his application, by republishing his "Projet d'une nouvelle Mechnanique" in a new and enlarged form, by an extensive correspondence, and by reading lectures to his scholars in the college of Mazarine, as well as in the royal college, in each of which he occupied a professor's chair. In the latter part of his life, much as he valued peace, he was engaged in a scientific dispute with an Italian monk on the subject of tangents, and the angle of contact in curves. In the two last years of his life he laboured under an arithmetical complaint, which baffled all remedies. At length, having finished his lecture at the Mazarine college, on the 22d of December 1722, he died suddenly on the following night. His character, says Fontenelle, was as simple as his superior understanding could require. He had no jealousy of the fame of others; for, indeed, he was at the head of the French mathematicians, and one of the first in Europe. In the discharge of every personal and social duty he was confidingly strict. On the theory of the mathematics few mathematicians have laboured more successfully than Varignon; introducing into this science that mode of generalization which characterizes it, simplifying many of its principles, and resolving many questions that had not before been confounded; such, especially, as relate to the doctrine of motion. His works, published separately, were "Projet d'une nouvelle Mechnanique," 4to. Paris, 1687; "Des nouvelles Conjectures sur la Pendante," 12mo. 1692; "Nouvelles Mechnaniques," 2 tom. 4to. 1725; and his papers in the different volumes of the Academy of Sciences are very numerous. Montucla Hist. des Mathém. Fontenelle's Eloge des Academicians.

VARILHES, in Geography, a town of France, in the department of the Arriege; 10 miles W.S.W. of Mirepoix.

VARILLAS, Antony, in Biography, was born in 1624 at Gueret, in the Upper La Marche, and upon his settlement at Paris, Gaillon, duke of Orleans, made him his historiographer; and in 1655 he obtained a place in the royal library, very favourable for the prosecution of his historical studies. Huet says of him, that no man ever brought to the illustration of French affairs so rich a provision of valuable observations, or so copiously a store of domestic narrative. But he adds, that his excellent qualifications were disparaged by his immoderate assurence, which led him to confide in his own conjectures and speculations, and to relate with as bold affection the things for which he had no authority, and which were altogether fictitious, as if he had been an eye-witness of them. In fact, Varillas was delitute of the most essential and estimable quality of an historian, a love of truth; and this has rendered his voluminous labours of inferior value. His leading object seems to have been the gratification and amusement of his readers. In the prosecution of this object he at first succeeded; his books were much read, and Colbert gave him a pension, which was afterwards withdrawn. In lieu of this, he contented himself with a pension which the French clergy granted him, as the reward of his services to the Catholic cause, obtained for his "Histoire des Révolutions arrivées en Europe en Matière de Religion," a mere party performance, concerning which Menage said to the author, "You have given a history of hereby full of heresies!" Bishop Burnet published a critique on part of it, which is said to have prevented Dryden from translating it; a talk which was proposed to him, after his conversion to Popery, by James II. of Bavle, and many others, have detected the errors and falsifications of Varillas. As his writings, which chiefly relate to French and Spanish history, are scarcely ever read or cited, it is needless to copy their titles. Varillas died in 1696, in easy circumstances, so that he left several legacies for pious purposes. Moreri. Huet. Nouv. Dict. Hist. Gen. Biog.

VARINAS, in Geography, a province and city of South America, which in the year 1787 was detached from the government of Maracaibo, and made a separate government, confeiated at the expense of those of Venezuela and Maracaibo. The chief has only the title of political governor, although his functions, in the district affiged to him, are the same as those of other governors, in the civil, military, and religious
VARIAN, a small island in the Spanish Main. N. lat. 11° 10’. W. long. 83°.

VARIOLE, in Surgery, the small-pox. See INOCULATION and SMALL-POX.

VARIOLE, Vaccina, the cow-pox, sometimes termed by modern medical writers vaccina. See COW-POX and VACCINATION.


Eff. Ch. Receptacles cup-shaped, with a torn border from the crust, powdery, with a fertile disk beneath.

The whole of this genus was confounded by Linnaeus under his Lichen fagineus, and L. laetius, so far at least as its species were then noticed. They now amount, in the last work of Acharius, to ten, all of a crustaceous nature, found, some on the trunks of trees, others on rocks or walls, one on the ground. We have several, of British origin, to add to this list.

1. V. velata. Veiled Variolaria. Achar. n. 1. (Lichen velatus; Engl. Bot. t. 2652. Parmelia velata; Trum. Tr. of Linn. Soc. v. 9. 143. t. 12. f. 1.)—Crust limited, tartaceous, thin, rugged, greyish, with a pale edge. Receptacles small, crowded; disk yellowish, veiled with a white membrane; border thick, even, of the substantiae of the crust.—Found by Mr. W. Borrer, but rarely, on the bark of ash-trees in Suffolk. The crust is thin, spreading in roundish patches, two or three inches broad, of a greenish-grey, corrugated in the disk, minutely fibrous at the edge. Receptacles numerous, sessile, shield-like, about a line in diameter, pale fumon-coloured, with a thick smooth border, from which a white membrane is drawn across the disk, so as entirely to conceal that part.

2. V. multipuncta. Many-dotted Variolaria. Turn. Tr. of Linn. Soc. v. 9. 137. t. 10. f. 1. (Lichen multipunctatus; Engl. Bot. t. 2661.)—Crust ash-coloured, warty, rugged, tartaceous, thin, with a fibrous edge. Receptacles hemispherical, with a white, aggregate, powdery disk, and smooth, lobed border.—Found, not uncommonly, on the trunks of beeches in Suffolk, by Mr. W. Borrer. Nearly akin to the last, but the crust is more of a grey hue, and lfts uneven, though becoming rugged and warty by age. It changes nearly to white in drying. Fructifications the size of the leaf, but essentially differing in the want of a separate membranous cover, and in having each receptacle marked with three or four depressions, making to many distinct disks, in one thick lobed border. The surface of these disks is white and powdery; their minute pale chesnut.

3. V. globulifera. Vehicle-fruitied Variolaria. Turn. Tr. of Linn. Soc. v. 9. 139. t. 10. f. 2. Achar. n. 3. Prodr. Fl. Grece. n. 2432. (Lichen globulifera; Engl. Bot. t. 2008.)—Crust spreading, faintly bordered, rugged, greyish with white powdery warts. Receptacles spherical, closed; at length burbling, with a thin rugged border, and blackish disk.—This also was discovered by Mr. W. Borrer, growing on the trunks of beeches and oaks in Suffex, but rarely. Dr. Sibthorp met with it in Greece. The crust agrees in appearance with the following, but the globular veicles, of the size of small peas, scattered over the disk, and each lodging a blackish receptacle of seeds, are peculiar to the present species.

4. V. faginea. Common Bitter Variolaria. Perf. in U. Ann. f. 7. 24. Achar. Meth. 12. Prodr. Fl. Grece. n. 2433. (V. communis; Achar. n. 4. Lichen fagineus; Linn. Sp. Pl. 1063. Achar. Prodr. 27. Hoffm. Enum. 18. a. 1. 2. f. 4.)—Crust cartilaginous, rugged, polished, greyish, bordered with brown. Receptacles prominent, hemispherical, mealy, very white, with a pale, flatthih, at length naked, disk.—Very common on the trunks of beech, fycamore, oak, &c. throughout Europe, from Sweden to Greece. The crust, in a perfect slate is circular, grey or greenish when young, corrugated, but with a smooth polished surface, and circumcised by a thin border, elegantly coloured with concentric shades of brown. Numerous, prominent, almost flattened, tubercular receptacles are scattered over the central part, which are very white, especially in wet weather; powdery and somewhat convex in their disks, with a clumsy indistinct kind of border. By age the flesh-like, the crust, become of a dirty white. Mr. W. Borrer has first observed a very bitter taste in this species, not immediately perceptible, but after a while very strong, disagreeable and permanent, like the flavour of the Cyclamen root. No other species of Variolaria has been found to have this bitternes.

We know not by what accident the learned Acharius, generally so accurate, has transferred it to our difcidea, which he has therefore called amara. His specific characters of the two species leave no doubt of what he intends under each, though we do not presume to decide on all his synonyms. This being the case, we do not feel authorized to change the old Linnean name, though we readily allow that Linnaus here confounded two species.

5. V. difcoidea. Flat-capped Variolaria. Perf. in U. Ann. f. 7. 23. Achar. Meth. 14. (V. amara; Achar. n. 5. Lichen difcoidea; Achar. Prodr. 28. Engl. Bot. t. 1714. L. fagineus; Hoffm. Enum. 19. B. C. D. t. 7. f. 3. 5. L. albescens; Hudd. 539. L. carnieus; Lightf. 607. Lichenioles candidus et farinaeacum, scutellii feri planis; Dill. Mufc. 131. t. 18. f. 11.)—Crust cartilaginous, cracked, somewhat rugged, polished, greyish, bordered with brown; at length powdery. Receptacles flatthih, mealy, very white; at length concave, deprehit, with a dilated torn border.—This is probably as common as the preceding, with which it has been confounded. The chief mark of distinction consists in the little elevation of its receptacles, which, after discharging their powdery contents, become quite concave, with a thin expanded margin. Hence the present plant has been separated by several botanists from fagineus, even without their advertitious to its insipidity, remarked by Mr. Borrer,
Borrer, and which obliges us to retain the old name difcoidea, that of amara being only applicable to the former, where it is not wanted. On the trunks of old trees, particularly in wet weather, V. difcoidea is very conspicuous for its whiteness. No proper receptacle, of a different colour from the ground, has been detected in this species.

6. V. conglobata. Conglobate Variolaria. Achar. n. 6. — "Cruft tartareous, thick, milk-white, plated and conglom- erated, with a smooth cartilagineous surface. Warts of the receptacles close-preffed, of the same colour. Dilk powdery. Margin elevated, tumid. Nucleus thick, included, yellowish; flattened above." —Native of France. This appears by its colour, and the different habit of its parts, to be distinct from all the other known species. Acharius.

7. V. gelisio-congress. Greyish-green Variolaria. Turner and Borrer Lich. Brit. t. 51, unpublished. Engl. Bot. t. 2400. — Cruft elliptical, thin, slightly tartareous, rugged, grey, scarcely limited. Receptacles roundish, with a narrow border. Powder greyish. — Gathered by Mr. Borrer, on the smooth cuticle of the bark of birch and cherry trees, in Norfolk. The patches, about an inch or two in length, and half as broad, look like a dirty flaw, or some decayed Leparia; but when accurately examined, prove to consist of a continued, rugged, though thin, crust, of a dirty greenish-grey, bearing very distinct mealy receptacles, of a yellowish rather bright green when wet, bordered with white.

8. V. Cinchona. Smooth Green Variolaria. — Cruft elliptical, thin, cartilaginous, polished, nearly even, olive-coloured, slightly bordered with black. Receptacles round, white, mealy, with a smooth pale border. — Found on the bark of Cinchona floribunda from the island of St. Lucia. Our only specimem is above an inch in diameter, of a brighter more olive-brown than the bark, but otherwise fearfully diftinguishable to the touch. The whitish fructifications, scattered all over it, smaller than pins' heads, are very conspicuous.

9. V. aspergillus. Sprinkled Variolaria. Achar. Meth. 13. — Turn. and Borr. Lich. Brit. t. 67. Engl. Bot. t. 2401. (V. communis g; Achar. Syn. 131. Lichen aspergillus; Achar. Prodr. 28, excluding the reference to Persoon.) — Cruft orbicular, tartareous, thickish, dull white, wrinkled, with a smooth, white, polished edge. Receptacles scattered, elevated, hemispherical, with an oblong border. Powder very white. — Found by Mr. Borrer in Suffolk, more commonly on rails than on trees. This gentleman and Mr. Turner have, on the authority of an original specimen, determined the synonym of Acharius. That learned botanist has sent us, under the name Fame, what has a different aspect, being whiter and full of cracks; and such may perhaps have induced him to refer his plant to V. communis (fagina) as a variety. However this may be, our aspergillus is inferior, and clearly distinct from fagina; yet, though like difcoidea devoid of bitterness, it cannot be confounded with this latter. The edge is polished and white; the rest of a pale greyish or blueish hue, unaltered by moisture. Receptacles neither numerous nor crowded, but scattered, convex, very prominent; their border minute, and soon obliterated; their internal disk, or nucleus, pale flesh-coloured, concealed by the copious white powder, which forms a dense mass, and turns greenish by rubbing.

10. V. cirreus. Ash-coloured Variolaria. Engl. Bot. t. 2411. — Cruft orbicular, tartareous, thin, ash-coloured, cracked; its circumference indeterminate. Receptacles orbicular, very small, white, with an elevated margin, and a flesh-coloured concealed disk. — Discovered by the Rev. Mr. Harrism of whinfone rocks, in the county of Durham. We conceive it to be of all things most distinct from the following, with which it is said to have been confounded. The colour and great tenuity of the crust; the want of an expanded or zoned border; the more evident red nucleus; and the much smaller receptacles; all mark it with precision. The white powder of the latter is easily abraded, and then the disk or nucleus becomes inconspicuous.


Mr. Turner found a pale brown nucleus, which we have not seen.

12. V. dealbata. White-wash Variolaria. Decand. France. v. 2. 525. Engl. Bot. t. 2519. (V. corallina; Achar. n. 8. Lich. Univ. 319. t. 5. f. 6. Lichen dealbatus; Achar. Prodr. 29. Indium corallinum, a supposed variety; Achar. Meth. 138. t. 3. f. 75. D. E. Red. T. paradoxum; and Borr. Lich. Brit. t. 97.) — Cruft tartareous, thickish, greyish-white, cracked, cutaneous, papillary and rugged; obscurely zoned at the circumference. Receptacles orbicular, prominent, white, with an aggregate internal disk. — Not rare on rocks in mountainous countries. Differs from the last in having a very narrow, imperfectly zoned, border, and especially in the cylindrical, papillary, cretaceous processes, sometimes in pairs, scattered over the crust. The receptacles when young are small, concave, powdery, white cups; but the few which arrive at maturity become raised, convex, the size of hemp-seed, their surface still white and powdery, but finally displaying several little, concave, brownish or flesh-coloured, separate disks. We are not quite free from doubts, as to the plant of Acharius being the same as our's, and therefore we would not hastily follow him in altering the name, by which we have already adopted this most distinct and curious species in the English Botany.


Acharius.

14. V. gaditana. Spanish Variolaria. Achar. n. 10. — "Cruft nearly orbicular, tartareous, continued, rugged, grey, powdery powdery; its circumference somewhat crenate, with little imbricated lobes. Receptacles hemispherical, or partly cylindrical, crowded in the centre, and of the same colour."

—Gathered on walls near Cadiz, by Don Simon de Roxas Clemente. The sorts, or receptacles, whether hemispherical or somewhat cylindrical, become concave with age.

VARIOLITE, in Mineralogy, a name given by some mineralogists to porphyritic rocks, in which the imbedded substances
fustances are imperfectly crystalized, or are rounded, giving the tone a spotted appearance.

**VAR**

**VARORUM** in *Maters of Literature*, a term or phrase of abbreviation, used for an edition of a classic author, printed in Holland, with the notes of divers authors upon it: *Cum notis variarum, or cum fidelis variarum observationibus.*

In this sense we say, Plantus variarum; a set of Dutch *variorum*, &c. Many of the *variorum* are valuable editions.

The word is the genitive plural of the Latin *variis*, different, divers.

**VARIS**, in *Ancient Geography*, a place of the ille of Al- bion, on the route from Segontium (Caernarvon) to Deva (Chester), between Conovium (Caer-Rhyon) and Deva; supposed to be Bodvary; 32 miles from Deva, or Chester.

**VARUS**, in *Ichthyology*, a name used by most authors for a small fresh-water fish, common in brooks and running waters, and well known in England by the name of the **minnow**.

**VARUS Mus**, in the old authors of *Geography*, a name used for the same creature they otherwise called *mus ponticus*; which seems to have been no other than the European flying squirrel.

**VARIX**, from *variis, irregular*, in *Surgery*, denotes an uneven swelling of a dilated vein. The tumor is fishish, generally not painful, and presents an appearance as if fluided with several knobs, or tubercles, which correspond to the valves in number and situation. The diseased vein is also elongated as well as dilated, and describes in its course a variety of windings or convolutions. A particular account of the symptoms, causes, and treatment of this common disease, will be found under the head of *Venicose I'iens*.

**VARIX**, in *Animalis*, a sort of fluffy dilatation or enlargement in some part of a vein, forming a kind of knot. It mostly happens in the veins of the legs, and is of the nature of spavin. It may readily be removed, on its first appearance, by the use of cold solutions, and applications of that sort, frequently applied, and suitable bandages.

**VARLER**, in *Geography*, a town of Germany, in the biphorphic of Munster; 4 miles N.N.W. of Coesfeld.

**VARLET.** See *VALET*.

**VARMAT**, in *Geography*, a town of Hungary; 12 miles N.N.W. of Zatar.

**VARIO**, a river of Italy, which runs into the Taja- mento, 2 miles N. of Ladiifana, in the country of Friuli.


**VARNA**, in *Geography*, a sea-port town of European Turkey, in Bulgaria, situated on a gulf or bay of the Black sea, to which it gives name, at the mouth of the river Vrana; the fee of a Greek archbishop. In the year 1444, Ladiifana, king of Hungary, was defeated and slain by Amurath I emperor of the Turks, near this town; 144 miles N. of Confitantinople. N. lat. 43° 14'. E. long. 27° 16'.

**VARNA.** See *VRANA*.

**VARNAVA**, a mountain of Greece, near Athens.

**VARNAVIN**, a town of Ruflia, in the government of Kolrom, on the Vetiluga. N. lat. 57° 16'. E. long. 45° 14'.

**VARNI**, in *Ancient Geography*, a people of Aia, in Baetria. *Ptolemy*.

**VARNISH, or VERNISH, VERNIX**, a thick, viscous, glossy liquor, used by painters, gilders, and various other artificers, to give a gloss and luster to their works, as also to defend them from the weather, dust, &c.

There are divers kinds of varnishes; some of the principal of which are as follow:

**VARNISH, Amber**, is prepared in the following manner: Put four ounces of amber into a crucible, and melt it with a small degree of heat, and pour it out upon an iron plate; when cold, reduce it to powder, and add to it two ounces of drying oil, that is, linseed oil thickened by boiling it up with litharge, and one pint of oil of turpentine, and dissolve the whole together into a liquid varnish.

This simple amber varnish is of great use for many purposes, and is said to be the basis of the fine varnishes which we fee on coaches, and may be prepared without drying oil, by boiling the powder of amber in linseed oil, or in a mixture of linseed oil and oil of turpentine. Drying oil is commonly used by the workmen; but Dr. Lewis thinks it more eligible to take the oil unprepared, that the boiling requisite for giving it the drying quality may be employed at the same time in making it act upon the amber. It has generally been thought, that amber will not at all dissolve in oils, till it has suffered a degree of decomposition by fire. But Hoffman relates an experiment, in his *Observations Physico-Chemica*, which discovers the solubility of this concrete in its natural state. Powdered amber, with twice its quantity of oil olive, was put into a wide-mouthed glafs; and a digestor, or strong copper vessel, being filled about one-third with water, the glafs was placed in it, the cover of the digestor screwed down tight, and a moderate fire continued an hour or more: when cold, the amber was found dissolved into a gelatinous, transparent mass. In Dr. Stockar's *Specimen Inaugural* de Succineo, printed at Leyden in 1760, we have an account of other experiments made by himself, in conjunction with M. Ziegler of Winterthur; from which we learn, that by continuing a simmering heat twelve hours, and confining the vapour as much as stone-ware vessels would bear without burbling, (the danger of which was avoided by making a small notch in the cork-foppers,:) powdered amber dissolved perfectly in expressed oils, in turpentine, and in balsam of copaiba; a strong copper vessel, with a cover screwed on it, seems most eligible; and for the greater security, a valve may be made in the cover, kept down by a spring, that shall give way before the confined vapour is of sufficient force to endanger burbling the vessel. Moreover, by digestion for a week in clofe-opped glafs vessels, in which the compreffure could not be very great, solutions equally perfect were obtained. The solution in rape-feed oil, and in oil of almonds, was of a fine yellowish colour; in linseed oil, gold-coloured; in oil of poppy-feeds, yellowish-red; in oil olive, of a beautiful red; in oil of nuts, deeper coloured; and in oil of bays, of a purple-red. The solutions made with turpentine and with balsam of copaiba, were of a deep red colour, and on cooling, hardened into a brittle mass of the same colour. All the solutions mingled perfectly well with spirit of turpentine. Those made with the oils of linseed, balsam, poppy-feeds, and nuts, and with balsam of copaiba and turpentine, being dilated with four times their quantity of spirit of turpentine, formed hard, tenacious, glossy varnishes, which dried sufficiently quick, and appeared greatly preferable to those made in the common manner from melted amber.

An amber varnish may also be made by boiling down some colophony, or turpentine, till it becomes black and friable, and melting this in a glazed earthen vessel, sprinkling in, by degrees, thrice as much amber in fine powder, with the addition of a little spirit or oil of turpentine now and then. When the amber is melted, sprinkle in the same quantity of sarcocolla, continuing to mix them, and to add more spirit of turpentine, till the whole becomes fluid; then strain out the clear
VARNISH.

clear through a coarse hair bag, preffing it gently between hot boards. This varnish, mixed with ivory-black in fine powder, is applied, in a hot room, on the dried paper pa[le] of which the *papi er mâché* is made; which is then fat in a gently heated oven, next day in a hotter oven, and the third day in a very hot one, and let stand each time till the oven is grown cold. The paste thus varnished is hard, durable, glossy, and bears liquors hot or cold. Lewis's Com. Phil. Techn. p. 367.

An amber varnish may be otherwise made by melting eight ounces of Chio turpentine, and when fluid, pouring into it, by degrees, a pound of fine powdered amber, and stirring it; and when it is properly mixed, setting it on a fire for half an hour, taking it off, and stirring it well, and adding to it two ounces of the white colophony. It is again to be put on a brisk fire, and covered close; when the mafs is perfectly fluid, and taken off too cool, a pound of linseed or poppy oil, made drying, is to be poured in boiling hot, and stirred till it be incorporated with the mafs; and then a quart of hot turpentine is to be added, and the whole well stirred. Let it then cool, and strain it off for use; when, if it has been properly made, it will be quite clear. See Gilding on Enamel and Glass.

VARNISH, Black, for japanning on wood or leather, is prepared by mixing lamp-black or ivory-black with a proper quantity of a strong solution of gum lac in spirit of wine. (See Japanning.) The lamp-black is commonly preferred to the ivory-black, on account of its uniting better with the fluid, and working smoother. The thicker part of the varnish, which settles at the bottom, is used with the lamp-black for the first coatings, and the mixture applied at different times, in a hot room, one layer after another, is dry, till a full body of colour is obtained; after which, the piece is washed over in the same manner several times, with the finer part of the varnish, just tinged with the black, so as to make a coating of sufficient thickness to bear polishing with tripoli. Iron snuff-boxes, mourning buckles, &c. are coloured black, by making them considerably hot, and applying on them in this flate a thick mixture of lamp-black, with a certain varnish called gold-size, confifting of drying oil, turpentine, and the pigment called Naples yellow; but the yellow might be omitted, and the varnish formed at once by mixing lamp-black with a proper quantity of turpentine and drying oil. The workmen, as Dr. Lewis says, frequently employ, as varnish for metals, a mixture of lamp-black, with the flavumings, &c. of different oil paints; the mixture is applied with a pencil, and the piece afterwards baked in an oven with a heat somewhat greater than is used for the *papier mâché*. Naples yellow, a superfluous ingredient in the black varnish, is the basis of the dark-brown which we see on some iron snuff-boxes; this pigment changing to a brown in baking with the varnish. Lewis.

See LACQUER.

The excellent black varnish of China and Japan, which has been hitherto but imperfectly imitated in Europe, and which was formerly thought to be an artificial composition of reinos bodies coloured with black pigments, has been discovered by the later travellers into those countries, to be a native juice, exuding from incisions made in the trunks of certain trees. Mr. Miller, in confequence of a letter from the abbé Mauret to Dr. Hales, containing a communication of the discovery of a plant by the abbé de Sauvages, which he calls *troidendron Cardinianum folis pinatis, florus mini- mis herbaceus*, and the black juice of which adheres, without the least acrimony, to cloth with more force than any other known preparation, takes occasion to shew, that this American toxiodendron is the fame species of plant from which the inhabitants of Japan procure the varnish with which they fit all their utensils; adding, that the Calicuts are also painted with the juice of this shrub. This American toxiodendron (see Poison-tree) is the fame plant, as he affirms, which is mentioned by Kämpfer, in his Amoenitates Exoticae, by the title of *arbor vernacifera legumina, folio pinato juglandis*, *fruita racemofe cireos facie*; i.e. the true varnish-tree, with a walnut-tree leaf, and a branching fruit like cicers. It is called by the inhabitants of Japan *sato*, or *fehiz-sa,yu*, and also *uru, e uru-nabi*. Kämpfer has also described the wild or fpurious varnish-tree, called *faji-no-ki* by the natives, which he says agrees with the other in every part, except that the lobes of the leaves are narrower; but Mr. Miller is of opinion that this is a distinct species, if not a different genus, from the true fort; and says, that the varnish yielded by it is of little esteem. The account which the Jefuits at China have given of the manner in which the varnish is procured, is as follows: they first fill the back of the branches of the shrub, in different places, with a knife; and thus there flows out a white clammy juice, which is received into wooden vefels; and when these become dry, they tap the stems of the shrubs near the roots, so that all the juice is drawn out of them. The shrubs are then cut down to the ground, and from their roots new ftems arife, which in three years will be fit for tapping. The juice turns black when exposed to the air; it heats without turning foud; but being of a poisonous nature, it is dangerous to handle it. This native varnish wants hardly any preparation; but if any dirt should happen to mix with it, it is cleansed by being strained through coarse gaze, put into wooden vefels, and covered with an oil called *toi*, and a skin, in order to prevent its evaporating. In this state it is carried over to China and Japan for sale. The shrub is chiefly cultivated in the provinces of Tü-kocko and Figo; and the best varnish, according to Kämpfer's account, is produced about the city Jaffino; but there is an ordinary fort of varnish, called *num-rak*, brought from Siam, which is collected in the province of Corefama, and in the kingdom of Cambodia, from the tree anacardus, called by the inhabitants *tong, ot tu-rak*, the fruit of which is called in our shops *anacardiun*. To collect this liquor, they bore a hole in the trunk, and insert a tube. By this method they procure as much of it as is sufficient, not only to varnish all the utensils of China, Tonquin, and Japan, but it is even exported in clofe wooden vefels to Batavia, and other parts of India. This varnish, says Kämpfer, is not only fold quite pure, but likewise coloured, with Chinese native cinnamon, and a kind of red earth, which the Dutch formerly, but now the Chinese bring them, and also with the materials of which they make their common Japan ink. Mr. Ellis has controverted the opinion of Mr. Miller, and endeavoured to shew that the American toxiodendron is not the fame with Kämpfer's *arbor vernacifera legumina*; alleging, that Kämpfer's defcription of the true varnish-tree does not agree with this toxiodendron; and he inclines to the opinion, that the Carolina pinuted toxiodendron, or psifen-she, is the fame with the *faji-no-ki*, or fpurious varnish-tree of Kämpfer. Mr. Ellis also thinks it is not improbable, that the varnish mentioned by Kämpfer, as obtained from the oriental anacardum, is the fame with that mentioned by father d'In- careville, in the Phil. Tranf. vol. xviii. p. 254, called *tong- yau*; which is fo universally used in China for preferving and ornamenting their furniture. See this controversy between Mr. Miller and Mr. Ellis at large, in Phil. Tranf. vol. xli. part i. p. 577—166. part ii. p. 806—876. vol. i. p. 420—456. See Poison-tree, Linen, and Japanning.

VARNISH, Brown, for Metals. See Black Varnish, fupra.

Varnish,
VARNISH.

VARNISH, Copal Oil, called in France vernis martin, is made by pouring into a well-glazed strong earthen pot, in shape resembling a chocolate pot, and in size large enough to hold about a gallon, and made warm, four ounces of Chio or Cyprus turpentine, and when this is dissolved, eight ounces of finely powdered amber; mingling them well, and setting them on the fire for a quarter of an hour; take off the pot, and pour gently into a pound of copal, finely bruised, but not powdered; stir the mass, and add four ounces of Chio turpentine, and a Gill of warm turpentine oil; then let it on a brisk fire for about half an hour, and taking it off, stir the contents well, and add two ounces of the finest and whitest copal. Let the pot be put on a very brisk fire, and remain till the whole is dissolved, and become as fluid as water; let it be removed from the fire, and remain for a few minutes, and then gradually pour in twenty-four ounces of poppy, nut, or hinseed-oil, made drying, and boiling hot, and stir the mass with a deal flick. When the gums and oil are thoroughly incorporated, let them over the fire for a few minutes, fill them stirring them, and let them boil once up; and having taken off the pot, pour into it a quart of hot turpentine; stir them together, and give them one boil up; take off the pot, and pour into it a pint more of hot turpentine, still stirring it well. If the gums are thoroughly melted, and well incorporated, the varnish is made; which, being cool, is strained through a close cloth into another vessel, and, if it be too thick, thinned with oil of turpentine, till it becomes of the consistence of linseed-oil; strain it a second time, bottle it for use, and let it stand a month, at least, before it is used. This varnish is used for coaches, cabinets, &c.; and the piece, whatever it be, after having been varnished smoothly, and dried in the intervals half a dozen times, and suffered thoroughly to dry, must be rubbed with a wet coarse rag, dipped in pumice-stone, powdered and sifted, till the streaks of the brush and all blemishes are removed. When it is perfectly smoothed, washed, and dried, the coats of varnish are to be repeated, for ten or twelve times, till there be a sufficient body. After having again used the powdered pumice-stone, and washed it off as before, let it be rubbed with fine emery, till the surface becomes even and smooth as glass; then with powder of fine rotten stone, till by polishing the palm of the hand two or three times over the same place, you discover a gloss equal to that of glasses: having dried it clean, dip a rag, or piece of flannel, in sweet oil, and rub the surface a few times over, and clear it off with fine dry powdered flour, or the hand; and a piece of fine flannel, dipped in flour, and rubbed over it, when cleared of the oil, will give it an excellent lustre. Between every coat of varnish it will be advisable, if the subject admits of it, to let it in a warm oven; or to heat the varnished pieces by roves. See Copal.

VARNISH, Gold-coloured. See Lacquer.

The composition of a gold-coloured varnish, used by the English artists for brs and silver, was communicated to some of the French academicians in 1720, by Mr. Scarlet, and in 1738 by Mr. Graham, and published in the volume of the French Memoirs for 1761. It is as follows: Take two ounces of gum lac, two ounces of yellow amber, forty grains of Dragon's blood in tears, half a drachm of lafiron, and forty ounces of good spirit of wine: infuse and digest in the usual manner, and then strain through a linen cloth. The piece to be varnished must be heated before the liquid is applied: it receives from the varnish a gold colour, and may be cleaned, when fullled, with warm water.

VARNISH for preserving polished Iron from Rust. See Iron.

Many methods have been used for preserving iron utensils from rust, as animal fats, oils, boiled oil mixed with melted lead, &c. Homberg's salve for this purpose consists of two pounds of hog's-lard, an ounce of camphor, and as much black lead as will render the mixture of an iron-colour; when this is used, the iron must be previously heated. M. Reaumur has discovered a better composition for this purpose: it is oil, inflam'd by being exposed to the air in flat shallow vessels, so as just to cover the bottom, mixed with a solution of copal in spirit of wine: this forms an elegant hard varnish, which, rubbed on polished iron, made a little hotter than the hand can bear, will cover it with a solid, thin, transparent coat, without any injury to its colour or appearance. See Rust.

VARNISH; Lacca, is made of gum lacca and spirit of wine, frequently shaken till the gum be disolved, then strained, and the clear liquor decanted off.

The lacca ought to be of the kind called feed lacca. (See LACC.) Three ounces of this, well purified by repeated ablation of water, dried and powdered grofsly, should be put into a bottle with a pint of rectified spirit of wine, so as to fill about two-thirds of it, and the bottle placed in a gentle heat; proceeding as above: though for varnishing ordinary woods, shell lacca is often used. For this purpose, five ounces of the best shell lacca should be grossly powdered, and put into a bottle, holding about three pints or two quarts, with one quart of rectified spirit of wine; and placed in a gentle heat: the mixture must be filtered through a flannel bag. To this varnish, the colours used in varnish painting may be added, and properly diluted with rectified spirit, and kept in phials, or tin vessels closely stopped for use. But this will not stand against the weather.

For various preparations of this kind, see Japanning and Lacquer.

VARNISH, Mastic, is made by putting five ounces of powdered mastic into a proper bottle, with a pound of spirit of turpentine, and letting them to boil in balsam Marie, till the mastic be disolved, and straining the solution through flannel. This varnish may be converted into a proper varnish for painting, by grinding one ounce of gum anime on a stone with water; till it becomes an im-palpable powder; then drying it, and grinding it again with half an ounce of turpentine, and afterwards with the proper colours, and moistening it with the mastic varnish, till the mixture be of a due consistence for working with the pencil. It must then be kept in phials or tin vesicles, and diluted, as there may be occasion, with spirit of turpentine.

VARNISH for preserving Paintings. See Picture.

For this purpose some have recommended the following composition: viz. half a pound of gum fandarac; an ounce and a half of Venice turpentine; three-quarters of an ounce of each of the gums anime and copal; half an ounce of mastic; benzoin, gum elemi, and white refin, each two drachms, and one pound of rectified spirit. The benzoin and gum anime powdered, are put with the Venice turpentine into a phial, with eight ounces of the spirit of wine; the copal and refin powdered are also put in a phial with fix ounces, and the powdered gum elemi, with two ounces of spirit of wine. The several phials are frequently shaken, till the gum, &c. are disolved; then the solutions are strained through a fine linen in one bottle, and when the mixture has stood some days, it is decanted off clear, and kept in a separate bottle for use. Some have substitute the farcocola for the copal. Another composition is formed, by dissolving mastic and fandarac, grossly powdered,
Varnish

and discovered others must His Greek, work the glibby a in fusceptible Rodopa. and 1542, is died medal but thoroughly naval turcois blue, a and He others fine pencil. pound In separate alfo in inventor, one varnifh, Venice turpentine half an ounce, by olibanum, fhould dering not fofter them time, varnifhing by the attraction of the cloth on the oils mixed with them. An oil of turpentine varnish may be added by grossly pow- dering maffic and fandarac, of each four ounces; two ounces of white reffin; and farcocolla, anime, copal, and olibanum, of each one ounce; and putting them into a phial with two pounds of oil of turpentine, flopping the phial gently, and placing it in any heat, fo that the mafs may not boil, and flaining off the solution for use. Or, a varnifh more simple, and equally good, may be made by pow- dering two ounces of fandarac, maffic and olibanum, of each an ounce and a half; or three ounces of maffic, and Venice turpentine half an ounce; and diffolving them in half a pound of oil of turpentine, and proceeding as before. Handmaid to the Arts, vol. ii. p. 227, &c.


Varnish for Printers' Ink. See Printing-Ink.

Varnish, White, is usually made of gum fandarac and gum maffic, diffolved in fpirits, left to fettle two days, then flained through a linen cloth, and, after flanding some time, the clear poured off, and bottled for use.

The more curious artists difolve the two gums separa- rately; and having made a feparate varnish of each, mix them occasionally, as their work requires a thicker or a fottier varnish.

But for the left white varnish more gums are required; viz. Venice turpentine, gum copal, elemi, benzoin, anime, and white reffin.

Besides these, there are hard and soft varnishes, or grounds, used by the etchers and engravers. See Etching.

Varnish is also used for a kind of glibby coat, with which potter's-ware, Delf-ware, China-ware, &c. are covered, to give them a smoothness and luftre. Some prepa- ration of lead is the varnish ordinarily used for the firft; and earths for the second. See Glazing and Pottery.

The true varnish used by the Chinese and Japanefe, to give that inimitable luftre to their porcelain, is one of the grand feats in that manufacture; and is one of the great things wanting, to make Delf and French ware vie with the Chinese. Several have described the preparation of it, particularly Kircher; but none ever succeeded in the trial. See Porcelain and Varnish, supra.

Varnish is also a term applied to the colours which antique medals acquire in the earth.

The value of a medal is heightened by a beauty, which nature alone was able to give, and art has never yet attained to counterfeit; we mean the colour or varnish with which certain foils tinge the medal; some with a blue, almoft as beautiful as that of a turcois; others with an inimitable vermilion colour; and others with a glibby shining brown, infinitely beyond any of our figures in bronze.

The moft usual varnish, however, is a fine green, which hangs to the moft delicate strokes without effacing them; much more accurately than the finest enamel does on metals. Brats alone is fulcceptible of it; for as to silver, the green

ruit that gathers on it, always spoils it; and it muft be scoured off with vinegar, or lemon juice.

There is also a falfe, or modern varnish; which the fal- fiers of medals give to their counterfeits, to give them the air of antiquity: it is discovered by its being fottier than the natural varnish, which is as hard as the metal itself.

Some lay their fpurous medals under ground, where they contract the degree of varnish, that they impose on the lefs knowing: others use ful ammoniac, mixed with vinegar; others the acid spirit of nitre, &c.

VARODOPA, or VERODOPA, in Ancient Geography, a pro- vince in the environs of Macedonia, according to Europius. Ortelius makes it a country of Thrace, writing it Rodopa.

VAROE, in Geography. See VARIOE.

VAROLI, Costanzo, in Biography, was born at Bo- logna in 1542, and became a professor of phyfic and fur- gery in his native city. In 1572 he was invited by pope Gregory XIII. to settle at Rome as his fair physician, and professor in the college of Sapienza. He was advancing in reputation by his anatomical discoveries, as well as in his practice of medicine and surgery, when a premature death cut him off in 1575, in the 33d year of his age. He was particularly distinguished in the anatomy of the brain, which he described in his work "De Nervis Opticis nonnullis quibus præter communem Opinionem in Humano Capite operatvs Epiftola ad Hieronymum Mercuriam," Patav. 1570. Among the parts of the brain which he dis- covered, or more accurately described, was that known by his name, the "Pons Varoli," formed by the union of the crura cerebri and cerebelli, and the place whence several nerves originate. After his death was published "De Re- solutione Corporis Humani," a work which is a com- pendium of anatomy, chiefly according to the ancients, but with several new observations by himself. Haller. Eloy. Varoli Pons, in Anatomy. See Pons.

VARORE, in Geography, a town of Hindooftan, in Baramaul; 14 miles N.N.W. of Darempour.

VAROTARI, Dario, in Biography. See Paduanino. VARPA, in Geography, an innland near the N.E. coast of Sumatra, about 30 miles in circumference. S. lat. 6° 30', E. long. 103° 25'.

VARO, Marcus Terentius, in Biography, the most learned of the ancient Romans, received from Pompey the Great, in the piratical war, a naval crown, and joined this chief in the civil war agains Cæfar; but afterwards submitting to the latter, he was employed by him in making a collection of books for the public library which he proposed to establish at Rome. The death of Cæfar prevented the accomplishment of this design; and Varro, being involved in the proscription by the triumvirates, escaped with his life, but with the loss of his library. After the restoration of tranquillity, he retired for the prosecution of his studies, and composed books till his 88th year. His life was prolonged to the age of 90, and he died about the year B.C. 27. He is highly extolled for his various talents and literary performances by ancient writers, and par- ticularly by Cicero in his "Academics." Anius Gellius cites a passage from Varro, in which he declares of himself, that to the 78th year of his life he had composed 400 books, and he continued to write to his 90th year. The subjects on which he wrote, as we learn from Fabricius, were grammar, eloquence, poetry, the drama, history, antiquities, philosophy, politics, agriculture, nautical affairs, architecture, and religion. He was also the first Latin author of that species of satire called the Menippian, from Menippus, a Greek, its inventor, which was written in prose, with a mixture of verse in different measures. (See

Menipean.)
V A R

MENIPANE.) Such and so pre-eminent was the reputation of Varro, that when Aemilius Pollio, in the reign of Augustus, opened the first public library at Rome, and placed in it the effigies of various learned persons, he was the only living writer who had the honour of this distinction. The only relics of his numerous works are six books, in an imperfect state, out of twenty-four, which he composed on the Latin language, with three books on agriculture, and a few fragments of his epigrams. The former are printed among the "Auctores de Lingua Latina," and the latter among the "Auctores de Re Rutilia."


Gen. Ch. Cal. Perianth of one leaf, inferior, tubular, with five long, slender, recurved teeth, permanent. Cor. of one petal, tubular; tube cylindrical; limb in five deep spreading segments. Stem. Filaments five, awl-shaped, the length of the corolla, inserted into its tube; anthers oblong, incumbent. Petf. German superior, ovate; style thread-shaped, the length of the corolla; stigma four, bristle-shaped. Pet. Drupa ovate, of one cell, inclosed in the swelling calyx, but not connected with it. Seed. Nut roundish, of four cells.


A West Indian genus of shrubby plants, with simple, alternate, rarely almost opposite, rough leaves; and terminal, aggregate, rather ornamental, flowers. They are little known in our flowers, nor has any one species as yet been exhibited in our popular periodical works. Variocina is next akin to Tournefortia (see that article;) but the leaves are divided, and each leaf of six leaves, and four slender bristles, are sufficient to mark the present genus, without advertizing to their fruits, which are not in all cafes well understood.

1. V. lineata. Round-spiked Varroina. Linn. Sp. Pl. 275. Willd. n. 1. Ait. n. 1. Swartz Obs. 87. (V. fruticosa, folia rugosae, ovatis, subfibrifitas, ferratis, alternis, capitulis subfubrosis; Browne Jam. 172. t. 13. f. 2. V. humilis; Jacq. Amer. 41. Ulmi angustifolii facie Bacchus jamaceif. folio purpureo fructi botryoide monopermo; Pluk. Almag. 393. Phyt. t. 328. f. 5.)—Leaves lanceolate, minutely hairy, marked with straight defrived veins. Flower-flaks mostly axillary, combined with the footstalks. Spikes globose.—Common in the lower woody lands of Jamaica. The stem is three or four feet high, with many slender, round, downy, crooked, entangled, leafy branches. Leaves spreading, or rather dependent, two inches long, taper-pointed, daintly and irregularly serrated; roughish, like a very fine file, with minute rigid hairs, above; denely downy and hoary beneath. Footflaks hairy, a quarter of an inch long, united for half their length, to the base of each simple, solitary, downy flower-flak, which is about half the length of the leaf, and bears a round head of small white or yellowish flowers. Plukent's figure is a much better representation of the Linnaean specimes from Browne himself, than his own plate, particularly with respect to the situation of the flowers. We cannot but suspect some error, and that the said plate may represent a species not hitherto well defined.

2. V. bullata. Blotted Varroina. Linn. Sp. Pl. 276, excluding Jacquin's synonim. Am. Acad. v. 5. 394. Willd. n. 2. Swartz Obs. 88.—Leaves ovate, venous, rugose, rough with callous tubercles and bristles. Spikes globose, on long rough stalks, from the forks of the stem.—Native of Jamaica. The Linnaean specime is from Browne, but does not answer to the description of either of his species. The branches are forked, extremely rough with minute warts, and rigid ascending bristles, as are likewise the footstalks and flower-flaks. Leaves an inch and a half or two inches long, about four times the length of their stalks, nearly elliptical, acute, serrated, reticulated with copious veins, and minutely blotted in the interstices; beakned on the upper side with callous tubercles and bristles, which turn white by age, when the leaf becomes tawny; paler, with hairy veins, beneath. Flower-flaks from the forks of the branches, solitary, from one inch to two inches and half a long, erect, simple, very rough, quadangular upwards. Spike globose, of six or eight flowers. Calyx corrugated, bristle, with linear recurved teeth. Corolla not much longer than the tube of the calyx, with five plait in the limb. Fruit tuberculated. Many doubts have arisen respecting this species. What we have here, with all possible precisio, described, is certainly the Linnaean authentic specime, which we should suppose to be the Lantana Radulata of Swartz, Ind.occ. 1557. Willd. Sp. Pl. v. 3. 317; to judge at least by the description, not having seen the plant. Nevertheless our's has the calyx and corolla of a Varronia, and the habit of the plant is so near V. mirabiloides, as figured by Jacquin, that Linnaeus may well be excused for supposing them one and the same. In the Linnaean herbarium are two other specimes, sent by Roderer, and marked likewise V. bulbata. It must be to these that Swartz alludes, when he says, in his Obs. 88, "there is a specime of V. globosa in Herb. Linn. under the name of bulbata." Whether this be correct or not, these have never been described as bulbata, though, by mistake, so named.

3. V. mirabiloides. Salver-flowered Varroina. Jacq. Amer. 41. t. 33. Willd. n. 3. Swartz Ind. occ. 465.—Leaves ovate, rough, serrated. Spikes roundish, unequal. Corolla salver-shaped; its tube three times the length of the calyx.—Native of Hispaniola, even in hedges near the town of Port-au-Prince. Jacquin. The most elegant of its genus, often twelve feet high. Leaves two inches long, rough on both sides. Flower-flaks lateral and terminal, measuring three or four inches, and bearing each a simple or divided round-headed spike, of numerous white inodorous flowers, very hardy, the size of Marvel of Peru. Segments of the calyx small, ovate, ending in long bristles. Drupa red, the size of a pea, full of sweet glutinous pulp. Nut defrived. Such is the plant of Jacquin, and we must suppose Swartz's the same, in spite of some flight incongruities of description. We have never seen either.

4. V. martinicensis. Martinico Varroina. Jacq. Amer. 41. t. 32. Willd. n. 4. Ait. n. 3.—Leaves ovate, pointed. Spikes oblong, dense. Calyx-teeth linear, half the length of...
of the tube.—Native of Martinico. Sent to Kew by Sir Joseph Banks, in 1795. It is said to flower in the flow the two months of August and September.—A shrub as tall as a man; the young branches only rough with close-prefixed hairs. *Leaves* three inches long, sharply serrated; rough above, with minute deprefened hairs; soft and downy at the back. *Flower-flanks* solitary, a little above each fork of the branch, silky and a half long, each bearing a dense *spikes*, about an inch long, of many funnel-shaped, probably white, flowers. *Calyx* silky, with broader and shorter teeth than any of the foregoing.

5. V. *globofa*. Globofe Varronía. Linn. Sp. Pl. 276. Willd. n. 5. Jacq. Amer. 41. — *Leaves* lanceolate-oblong. Stem forked. *Flower-flanks* axillary, elongated, naked. Spikes globose.—Native of the West Indies. An obscure species, of which we can only give the Linnaean specific character, the author of which adds pedunculus e diebotomia nuda; meaning, probably, that whenever a flake springs from the fork of the stem, it is accompanied by a leaf. Linnaeus further says, that the *calyx-teeth* are long, linear, and recurved. Whether the specimen above-mentioned from Rolander (see n. 2) be this species or not, we have no authority to say. Sir Joseph Banks has favoured us with what he considers as *V. globofa*, from Von Rohr, which may be the same; the *leaves* and *flummets* are much blunter, but hardly enough to make a specific distinction.—In this the *leaves* are scarcely above an inch long, rough and rather hoary, especially beneath, as are also the *branches* and *footsflaks*. *Flowers* numerous, in denes, globular, silky, flaked heads, either from the forks of the younger branches, or opposite to a leaf. *Calyx-teeth* as described by Linnaeus.

6. V. *curassavica*. Long-spiked Varronía. Linn. Sp. Pl. 276. Willd. n. 6. Jacq. Amer. 40. n. 1. Swartz Ob. 88? (V. auffurgenus farmenta, folis et capitulis oblongis; Browne Jan. 1722)—*Leaves* elliptic-oblong, minutely toothed. Spikes oblong. *Calyx-teeth* triangular, slightly pointed.—Sent by Von Rohr from the West Indies, and given by us to the late Mr. Dryander, as the authentic plant of Jacquin, compared doublets with his specimen. Yet the *calyx-teeth* have lefs evident points than he describes, and the *spikes* are rather lax. Whatever our intelligent friend Dr. Swartz may have had for *V. curassavica*, we can assert that our is certainly different from *martinicus*. (See his Obs. 88.) Jacquin describes it fifteen feet high, with round rough *branches*, roughy when old. *Flowers* small, white, without scent, in denes terminal *spikes*, two or three inches long. *Drupa* small, red.


8. V. *alba*. White-flowered Varronía. Linn. Sp. Pl. 276. Jacq. Amer. 41. Willd. n. 8. (Melipus americana, alni vel coriyli folis, fructu mucaginolio albo; Comm. Hort. v. 1. 155. t. 80.)—*Leaves* heart-shaped, pointed, flowers cy- mole.—Native of South America, about Cartagena and in Curaslaw. A tree, often thirty feet high, with an ample spreading head, and a trunk fix inches in diameter; though in hedges it is scarcely more than a shrub. *Leaves* four or five inches-long, ferrated, rough; somewhat heart-shaped at the base. *Cymes* large, not uncommon extending fix inches, of numerous, white, scented *flowers*. *Calyx* at first entire, but, as the *corolla* protrudes, it is pushed aside horizontally, splitting into two valves, the upper withering, the under permanent, and the margin is seen to have five very flight teeth. Limb of the *corolla* bell-shaped. *Drupa* oblong, measuring half an inch, whitish, termepellucid, sweet, but inodorous and glutinous, eaten by the inhabitants of Curas-
fow. *Nuc* oblong, fritated, black.

9. V. *monosperma*. Single-seeded Varronía. Jacq. Hort. Schoenbr. v. 1. 18. t. 39. Willd. n. 9.—*Leaves* ovate; entire at the base. *Cymes* lateral. Flowers capitulate.—Native of the Caracas. It flowered in the flow at Schoenbru all summer long, and bore fruit. The *stem* is twelve feet high. *Leaves* three inches in length, flaked, ferrated from about the middle only. *Flowers* small, white, in little globular heads, collected into flaked *cymes*, which spring laterally from the branches, about half way between the leaves. *Calyx-teeth* triangular, scarcely pointed. *Corolla* bell-shaped, abrupt, crested. *Stigma* dilated, obtuse. *Drupa* scarlet, the size of a pea. There being but one kernel, is probably owing to the plant not being in a natural situation, and therefore is wifely omitted by Will- denow in the specific character. For the same reason, the name may probably prove exceptional.

In studying this genus, we cannot but observe that the species are not fo distinctly known, nor so well defined, as could be wished, nor do we pretend to have placed them all beyond the reach of uncertainty, our materials being, in several instances, defective on the score of authority.

VARRONIAN SATIRE. See SATIRE.

VARS, in Geography, a town of France, in the department of the Charente; 6 miles N. of Angoulême.

VARSAKA, a town of Imiretia; 10 miles S.E. of Cotatis.

VARSETCH, a town of Ithria; 8 miles E. of Pedana.

VARSHNEYA, in Mythology, a name of the Hindoo deity *Krishna*; which fee.

VARSOVIA, in Geography. See WARS.

VARU, an island in the Caribbean sea, near the coast of South America, about sixteen miles long, and three broad. N. lat. 10° 12'. W. long. 75° 25'.

VARVELS, in Falconry, small rings about a hawk’s leg, with the owner’s name on them.

VARUNA, in Hindoo Mythology, is the genius or regent of the waters, corresponding with the Neptune of Western heathens. As light is thought to be excluded from the deep, Varuna is also deemed the governor of the night, or of darkness; in this character, as well as in that of lord of punishment, coalescing with the Hindoo *Pluto*, who is named *Yama*; which fee. Still he is one of the twelve funs, called *Aditya*, of which see our article *SUREYA*. As lord of punishment, the wealth of criminals is directed to be offered to him; or, in other words, thrown into the waters; or it may, instead, be bestowed on a learned priest. The latter, we may suppose, is likely, on most occasions, to outshine the deity. In the Institutes of Menu, ch. ix. v. 243; 45. 5, these texts occur. “Let no virtuous prince appropriate the wealth of a criminal in the highest degree; for he who appropriates it through covetousness, is contaminated with the same guilt. Having thrown such a fine into the waters, let him offer it to Varuna; or let him bestow it on some priest of eminent learning in the scripture. Varuna is the lord of punishment; he holds a rod even over kings, and a priest who has gone through the whole Vedas, is equal to a sovereign of the world.” In another text, c. ix. v. 398, it is said that “Varuna most assuredly binds the guilty in fatal cords.” Like other Hindoo deities, Varuna has a consort, or falki, assigned him. She is called *Veruni*; which fee. He has likewise a terrestrial palace or paradise, situated far in the

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Well, named Subbrowati; which see. He has also had a terrestrial incarnation, under the name of Samvara.

VARUNI, the comfort of the Hindoo Neptune, who is named Varuna; which see. As well as his comfort, he is said to be his daughter; a double relationship not uncommon with the gods both of India and Greece.

VARUS, or VARUM FLUMEN, the Var, in Ancient Geography, a river, which, in the time of Strabo and Pliny, separated the Gauls from Italy.

VARUSA, a river of Italy, in Gallia Citalpina, which discharged itself into the Po, near the confluence of this river with the Ticini.

VARUTHA, a town of Asia, in the Greater Armenia.

VARY, in Geography, a town of Hungary; 10 miles S. of Munckoeze.

VARZEA, a town of Portugal, in the province of Beira; it miles S.S.W. of Lamego.

VARZEO, a lake of Russia, in the government of Archangel; 69 miles E. of Mezen.

VARZY, a town of France, in the department of the Nivre; 7 miles S.S.W. of Clamecy.

VAS, VESSEL. See VESSEL, VESICULA, and ANGIOLOGY.

Hence, in the phrase of anatomists, the vasa adiposa, preparatoria, &c.

VAS Chyliiferum, in Anatomy, the thoracic duct. See ABSORBERS.

VAS DEFERENS, the excretory tube of the testis. See GENERATION.

VASA Brevia, the short arterial and venous ramifications proceeding from the splenic trunks to the great end of the stomach. See ARTERY, and VEIN.

VASA EFFERENTIA et INFERENTIA; the latter are the lymphatic vessels, which enter an absorbing gland; and the former, those which go out of it. See ABSORBERS.

The tubes which pass from the upper end of the testis, and unite to form the epididymis, are also called vasa efferentia. See GENERATION.

VASA LACTEE, or Vena Lactee, the absorbents which take up the chyle from the small intestine. See ABSORBERS, and INTESTINE.

VASA VENOSORUM, the vessels which belong to the coats of vessels. See HEART.

VASA CONCORDIA, in HYDRAULICS, are two vessels, so constructed, as that of one of them, though full of wine, will not run a drop; unless the other, being full of water, do run alto. Their structure and apparatus may be seen in Wolluss, Element. Math. tom. ii. Hydraul. Vasa, in Geography, a town of Turkistan, on the Sirr; 70 miles W. of Taraz.

VASA, or Wafa. See WASA.

VASAGUDA, or VAGAGUDA, in Ancient Geography, a town of Africa, in Mauritania Cazeria. Ptol.

VASANTA, in HINDOOS Mythology, is the name of the bolom friend of their Kama, god of love. Among the Maharattas and low people he is called Bellant, Bellent, or Buftant; he is a perifonification of the feafon of spring; and fongs in his honour are chanteed by minbrods of both sexes at vernal and other festivals. See under KAMA for fome mention of his infeparable attendant.

VASARHELY, in Geography, a town of Hungary, on a small river, which runs into the Tisza; 50 miles N.N.W. of Temeswar. N. lat. 46° 27'. E. long. 20° 33'. Alfo, a town of Hungary; 22 miles E. of Câșimâr. Alfo, a town of Transylvania; 40 miles E. of Colovar. N. lat. 46° 37'. E. long. 25° 5'.

VASARI, GIOSTGO, in Biography, was born at Arezzo in 1512, and was first instructed in design by a glafs-painter, called il Prete Gallo, but afterwards, being taken to Florence by the cardinal Pafferini, studied under M. Angelo and Del Sarto. Another friendly cardinal conveyed him to Rome, the cardinal Ippolito di Medici; and under his protection he acquired riches and honours. In Rome he laboured assiduously, attacking himself particularly to M. Angelo, of whom he appears, by several letters preferred by Bottari, to have been very sincerely esteemed. He was employed in several public works at Rome, both as a painter and an architect, particularly in the Vatican, in the Sala della Cancellaria, where he painted, by the direction of the cardinal Farnese, a series of frescoes, representing the principal actions of Paul III. and in the church of S. Giovanni Dicollato, he painted for the principal altar the martyrdom of that saint, one of his most highly esteemed performances.

He was invited by Cofmo I. to Florence in 1553, and employed by that prince as superintendent of the important works then going on in the Palazzo Vecchio, where he executed, with the help of numerous disciples, the decoration of the principal apartments. Of his paintings there, pope Clement VII. crowning the emperor Charles V. was the most important, and it was accompanied, in other compartments in the same hall, by representations of the actions of that monarch.

There are many other works of Vafari scattered about Italy, as at Bologna, Arezzo, and Rimini, &c.; but after all he was a tame copyist of Michael Angelo's manner, and a very indifferent colourist. He is far more endeared to us by his writings than his pictures. His work, entitled "Lives of the most excellent Painters, Sculptors, and Architects, from the Period of Cimabue till his own Time," is the fountain of knowledge concerning the greater part of them; and though in many points he appears to have been too facile of belief, and to have related histories without sufficient inquiry into their correctness, yet upon the whole the world is indebted to him for an ingenious and useful work; without which, the history of the art would not now have been so distinctly understood, nor the profession so justly known and honoured. It was first published at Florence, in two volumes, in 1550, and afterwards republished, with considerable additions, and heads engraved in wood of most of the artists mentioned, in 1568, and has since been re-edited with copious notes by Bottari. Vafari died at Florence in 1576, at the age of 64.

VASAVA, in Mythology, a name of the Hindoo god Indra: which see.

VASBARA, in Ancient Geography, a town of Africa, in the interior of Mauritania Cazeriafci. Ptol.

VASBUHL, in Ancient Geography, a town of Africa, in the interior of Mauritania Cazeria. Pтол.

Vasco, or VASORUM CIVITAS, in Ancient Geography, a town of Gallia Narbonensis, according to Ptolomy and Pliny.

VASCONES, a people of Hispania Citerior, at the foot of the Pyrenees. These people, who in later times passed into Gaul, where they assumed the name of Gaeons, lay to the east of the Cantabr, in the country now called Navarre; and they extended from the Pyrenees as far as the Iberus towards the south. Their principal towns were Pompelo, Calaguris, and Gracarius.

VASCULAR, VASCULARIS, in Anatomy, is applied to any thing consisting of divers vessels, veins, arteries, &c.

We say, the vascular and valvar texture of the lungs.
All the flesh, in an animal body, is found to be vascular, none of it parenchymous, as the ancients imagined.

Vascular Glands. See Gland.

Vascular, Vascularius, in Antiquity, was the denomination of a kind of artificers among the ancient Romans; who made silver and gold vases without relieves, or figures embossed on them.

Hence, according to Salmantius, it is, that Cicero, in his sixth oration against Verres, distinguishes vascularius from calato, engraver.

In the art called by the Greeks τέχνη κόσμου, which was the art of superadding ornaments of precious stones, or rich metals, to vases of other metals; the vascularii and calatores were different; the first being the goldsmiths who made the vase; the second, the sculptors who added the ornaments. But in the art called τέχνη κόσμου, or the art of cutting bas-reliefs, or stamping figures on metal, the vascularii were also calatores, or engravers; that is, they who made the vase, made also the relieves, or figures, with which it was enriched.

Vasculariues Plants, in Agriculture and Gardening, are all such the seeds of which are contained in vases, divided in the cells. There are several of these in both these departments. See Seed.

VASE, a term of equal import with the Latin vas, whence it is formed; and with the English vessel; which see.

It is applied to the ancient vessels dug from under ground, or otherwise found, and preferred in cabinets, &c. as vases of sacrifice, urns, &c.; and to other more modern vases, which are rather of curiosity and show than use; as those of crystal, porcelain, &c.

In the curious collection of ornamental works, made by Meifs, Wedgwood and Bentley, after the antique, there are vases of various kinds; some formed of a composition of terra cotta, refining agate, jasper, porphyry, and other variegated stones, of the vitreous or crystalline kind; others of black porcelain, or artificial basaltes, highly finished, with bas-relief ornaments; others of the painted Etruscan kind; and others again ornamented with encaustic paintings. The art of painting vases in the manner of the Etruscans has been lost for ages; however, these ingenious manufacturers set themselves to revive it; and, having carefully examined the original Etruscan vases, and having perused with attention the writings of the late count Caylus upon Etruscan antiquities, they were convinced that the colours of the figures could not be successfully imitated with enamel; and that their success must chiefly depend upon the discovery of a new kind of enamel colours, to be made upon other principles, and to have effects essentially different from those that were then in use, and are of the nature of glass; the Etruscan colours being burnt in, smooth and durable, but without any glassy lustre. In consequence of this observation, and by a great variety of experiments, they invented a sort of encaustic colours, not only sufficient to imitate the paintings upon the Etruscan vases, but to give the beauty of design the advantages of light and shade in various colours; and to render paintings durable, without the defect of a varnished or glassy surface. These encaustic colours may be applied with great ease and certainty; they change very little in the fire, are not liable to run out of drawing, are perfectly durable, and not glassy, and possess the advantages of enamel, without its essential defects. Catalogue of Cameos, &c. by Wedgwood and Bentley, 1773.

Vases, in Architecture, are ornaments of sculpture, placed on foci, or pedestals, representing the vases of the ancients; particularly those used in sacrifice, as the praefer clericum simpulum, incens-pots, flower-pots, &c. and occasionally enriched with baso-relievo.

They are commonly placed there to crown or finish façades, or frontispieces. They are frequently also called acroteria; and are usually infixed.

In forming and decorating vases, fancy has great scope. Many excellent inventions of these ornaments are transmitted to us from the ancients. A vase differs from an urn, as it is in general of a more elegant contour, and is lofty; whereas an urn should be low and wide, and always covered.

Vitruvius mentions a kind of theatrical vases, made of brafs, or earthen-ware, called echeia, υψαν. (See Echeia and Vitrivius); which they disposed in private places, under the steps and seats of the theatres, to aid and increase the reflection and resonance of the actors' voices, &c. It is said, there are also vases of this kind in the cathedral church of Milan.

VASE is particularly used in architecture to signify the body of the Corinthian and Composite capital; called also the tambour, or drum; and sometimes the compana, or bell.

VASE is also sometimes used among Florists, for what they otherwise call the calyx.

The vase, or rather calyx of a tulip, is the top or head of a tulip; the leaves of which form a kind of vase, or cup.

Goldsmiths, brauers, &c. also use vases for the middle of a church-candlestick; which is usually of a roundish figure, bordering somewhat on that of a vase.

VASE River, in Geography, a river of America, which runs into the Mississippi, 55 miles above the mouth of the Ohio.

VASEN. See Wesen.

VASH, a river of Grand Duchy, which gives name to the country it waters; and runs into the Gihon near Jerusalem. Also a province of Great Britain; which see.

VASHAN, a town of Hindoostan; 30 miles S.W. of Dindigul.

VASHCERD, a town of Grand Duchy, and principal town of a district watered by the Vash; 200 miles S.E. of Samarcand. N. lat. 39° 25'. E. long. 65° 50'.

VASHON'S ISLAND, an island near the west coast of America, at the bottom of the Admiralty Inlet, and eastern branch of the gulf of Georgia. N. lat. 47° 10'. E. long. 23° 25'.

VASL, a town of Russia, in the government of Nizegorod, on the Volga; 60 miles E. of Nizne Novgorod. N. lat. 56° 16'. E. long. 45° 44'.

VASILICA. See Basilica.

VASILKOV, a fort of Russia, in the government of Kiev; 28 miles S.S.W. of Kiev.

VASINA, a town of the island of Corea; 4 miles N. of Bafla.

VASIR. See Servent.

VASICHT'HA, in Biography, is the name of a celebrated person of Hindo o History and mythology: one of a class called Rishi, meaning a sage. Of these divine persons we have given a list, and some remarks, under the articles Rishi and Krkika; the latter being the Pleiades of the Hindoos, who have many very curious tales of their "shedding sweet influences." Vasicht'ha is a character frequently mentioned in the historical histories of the Hindoos, as being referred to for advice by royal and other persons requiring spiritual or other consolation. He is, indeed, called the preceptor of the inferior gods. A very celebrated commentary on the Veda, the Hindoo scripture, is ascribed to Vasicht'ha. It is in prose, with poetry intermixed; and is quoted as a high law authority. (See Veda.)
His wife, named Arundhati, is represented to have been exemplary in regard to holiness and sanctity, and to have been translated to the skies with her hapless husband: she is still quoted as proverbial for virtue and constancy. Vasiț'st'ha is a star of the second magnitude, in N. lat. 60°, and Arundhati is a smaller star near it.

In the Agni Purana, a hymn is addressed to Vasiț'st'ha; affording some clue to the relative antiquity of the poetical romances bearing the common denomination of Purana; which are.

**VASIȚ, or Wasiț, in Geography, a town of the Arabian Trak, on the Tigris. This town was built in the beginning of the eighteenth century, by Al Hejaz, the Arabian general. A mint was established, and in 707, money was coined there by order of the caliph. In 1401 it was plundered by Timur Bec; 96 miles S.E. of Bagdad. N. lat. 32° 19'. E. long. 45° 38'.**

**VASKINA, a gulf or bay of Ruffia, on the south coast of the island of Kalguev.**

**VASKOVNIA, a town of Ruffia, in the government of Pikov; 120 miles S.S.E. of Pikov.**

**VASLUI, a town of European Turkey, in Moldavia, on the Birlat; 32 miles S. of Jaffy. N. lat. 46° 40'. E. long. 27° 45'.**

**VASOKY, in Hindoo mythological Legend, is a name of a mighty serpent, more commonly called Sētha; which is. The name of Vasok, however, frequently occurs in the extravagant legends of the East. See KALIA and KURMA-VATARA.**

**VASON, in Geography, a town and castle of Hungary; 20 miles W.S.W. of Stuhl Weifenburg.**

**VASPINGE, a town of Perîa, in the province of Adir-betzan, containing about 600 houses; 9 miles from Tauris.**

**VASQUEZ, a town of the island of Cuba; 66 miles N.W. of Villa del Principe.‖ Alfo, a river of Mexico, which runs into the Spanish Main, N. lat. 11° 30'.**

**VASSAL, VASSALLE, in our Ancient Cullions, a person who vowed fidelity and homage to a lord, on account of some land, &c. which he held of him in fee.**

Du-Cange will have the word to come from vaffus, which anciently signified a servant or domestic of a prince, and sometimes also the comites, or officeres, in public trials. Menage, after Cujas, takes vaffal to have been formed of gassul, an ancient German word, signifying companion. Calene ởve derives it from the Gafful gassus, a brave man, from gassus, or gessum, or jessum, a kind of javelin used among them. Volfius derives vassal from vaut, vados, pledge; whence also he will have it to be, that they are sometimes called fidèles.

The vassal was also called piratus, lord's-man, and see-man; but now the denomination is changed into that of tenant in fee.

Accordingly the vassal, or feudatory, was only another name for the tenant or holder of the lands; though, on account of the prejudices we have justly conceived against the doctrines that were afterwards grafted on this system, we now use the word vassal opprobriously, as synonymous to slave or bondman. The manner of the grant, on the part of the proprietor or lord, who retained the dominion, or ultimate property of the feud, or fee, was by words of gratuitous and pure donation, de et concilis; which are still the operative words in our modern indentures, or deeds of seisin. This was perfected by the ceremony of corporeal inversion, or open and notorious delivery of possession, in the presence of the other vassals, which perpetuated among them the era of the new acquisition, at a time when the art of writing was very little known; and, therefore, the evidence of property was repose in the memory of the neighbourhood: who, in case of a disputed title, were afterwards called upon to decide the difference, not only according to external proofs, but also by the internal testimony of their own private knowledge.

They sometimes also used the term vaflour for vassal; whence vaflage.

If a vassal offended his lord grievously, either in person or in honour, he committed the crime of felony; which carried with it a confiscation of his fee.

VASSAL, a Rear, is he who holds of a lord, who himself is vassal of another lord.

VASSAL was anciently used for soldier; by reason fees, at first, were given to none but military men.

VASSALAGE, the state of a vassal; or a servitude and dependency on a superior lord.

Anciently, they distingushed between liege vassalage, and simple vassalage.

Lige vassalage only belonged to the king; as carrying with it an obligation on the side of the vassal to serve his lord in war, against all persons whatever. See LIEGE.

In all simple vassalage, the fealty, or liege vassalage, was still referred to the king.

Some also distingushed active vassalage, and passive: the first is the right of fealty reposing in the lord; the second, the service and duties incumbent on the tenant.

**VASSALBOROUGH, in Geography, a town of the province of Maine, on the Kennebeek; 204 miles N.E. of Boston.**

**VASSEN, or Waessen, a town of Holland, in the department of Guelderland; 12 miles S. of Hattem.**

**VASSIETTE, a river of America, which runs into lake Michigan, N. lat. 44° 38'. W. long. 86° 18'.**

**VASSY, a town of France, in the department of the Calvados; 8 miles E. of Vire.‖ Alfo, a town of France, and seat of a tribunal, in the department of the Upper Marne. In the year 1563, a bloody persecution against the Protestants began in this town; 9 miles S. of St. Dizier. N. lat. 48° 30'. E. long. 5° 2'.**

**VASTÂN, a town of Curdifan, on lake Van. In 1386, it was taken by Timur Bec; 20 miles S.W. of Van.**

**VASTANFORS, a town of Sweden, in Weftmanland; 32 miles N.N.W. of Stroemsholm.**

**VAŠAÚNA, in Ancient Geography, a town of Asia, situated in the S.E. part of the lake Arifi, towards the 38th degree of latitude.**

**VASTO, in Law, a writ that lies against the tenant for life, or years, for making waife.**

**VASTUS, in Anatomy, the name of two very large muscles belonging to the thigh. The body of the femur is completely enveloped, except at the linea aspera, by a thick muscular mass: this may be distingushed at its-ori gin into three portions, which soon become blended together, so as not to admit of separation. The part which covers the outside of the bone is called vastus externus; that which covers the inside, vastus internus; and the middle, cruralis, or cruræns. These have usually been described as three distinct muscles; but some modern anatomists have more properly considered them as one, under the name of triceps femoris: they form the tri-femoro-rotulien of Dumas.**

The triceps cruris then is a very thick flethy mass, of a rounded or convex figure, covering the thigh-bone, and extending from the hales of the trochanters to the patella and tibia.

The anterior surface is covered, towards the outside, by the tendon of the gluteus maximus, the tenor vaginae, the falcia
fasca lata, and the short portion of the biceps; at the middle, by the illicus internus, rectus extensor cruris, and the external circumflex veffels; on the infe, by the fartorus, the femoral artery, and the fasca. The posterior surface covers the body of the femur, with the exception of the linea alpea; it is attached to the anterior, external and internal surfaces of the bone, from the bafes of the trochanters to within four fengers breadth of the knee; then it is separated from the femur by a loofe and fatty cellular fubftance, and laftly, it covers the fynovial membrane of the knee-joint.

The outer margin is fixed to the rough line, which defcends from the great trochanter to the linea alpea, together with the gluteus maximus, to which it is clofely con- nected: it is then fixed to the external edge of the linea alpea, in its whole length, and to the upper two-thirds of that line, which defcends from the linea alpea to the external condyle of the femur, being connected in the latter situation with the fasca lata. The internal edge is fixed to the correffponding inner edge of the linea alpea, from the trochanter minor downwards; and to the upper two-thirds of the line defcending from it to the external condyle, being connected here with the tendon of the triceps adductor. Its upper extremity is divided into the three portions already mentioned. The external (vafus externus) and moft con- siderable is fixed to the circumference of the basis of the great trochanter; it defcends on the outside of the thigh, increasing in size to the middle of the limb, and then diminifhing again. At firft it is separated from the middle portion by a thin stratum of cellular fubftance; but they are fon confounded in one mass. The internal portion (vafus internus) is not in general very diftinft from the middle. Commencing at the root of the little trochanter, it defcends on the infe of the femur, firft increasing in size, and then diminifhing again. On its outide it is defparated from the middle portion, if at all, by a very feftile cellular line, for about an inch or two, after which they are confounded in one mass. The middle and smallfeft division (cruralis) commences at the basis of the neck of the thigh-bone, by an at- tachment to the rough line, which reaches from the great to the small trochanter: it defcends perpendicularly, increasing in size, refeated at firft from the lateral portions, but foon infeparably joined with them into one mass, surrounding the body of the femur, and ending in a tendinous extremity, attached to the bafes and fides of the patella, and to the tu- berofties of the tibia.

The laft-mentioned attachment is effected by means of a broad and thick tendon, connected in front to that of the rectus extenor cruris, and expanded laterally into aponeurofes fixed to the tuberofties of the tibia. Of these aponeurofes, the outer is clofely connected to the fasca lata. The tendon of the triceps is divided above into three broad portions, which ascend on the three divisions of the muscle. A thick and broad aponeurotic fHEET commences from the bafis of the trochanter major and the linea alpea, and covers the upper half of the vafus externus: a fimilar but smaller aponeurotic defcends from the linea alpea on the vafus internus. The muscular fibles of the vafus externus passes obliquely downwards and forwards from its superior aponeurofis, and from the aponeurotic septum, which separates it from the fhort head of the biceps to the inferior tendon. Of these fibles, the upper are the longest and moft perpendicularly; the fucceeding ones become more and more oblique, and the lowest approach to the tranverse direftion, accompanying the tendon to within an inch of its infertion.

Thick fibres of the vafus internus pass with a corre-
prefixed by some of his hearers, collected by Robert Stephens, and added to his publication in 1545; of Leo Judae's Latin version of the Bible. But as they contained some free passages, they were condemned by the doctors of the theological faculty in Paris, who, imperfectly acquainted with Hebrew, reposed their confidence in the Vulgate. However, the university of Salamanca reprinted the text and notes in Spain, R. Stephens defended them against the Paris theologians, and they have since been approved by men of learning. He not only encouraged Clement Marot to translate the Psalms into French verse, but assisted him in the undertaking. Vatable, though suspected of heresy, was an orthodox Catholic, and opposed the discipline and opinions of the Calvinists. He died in 1547, pollied of the abbacy of Bellezane. Dupin.

VATAN, in Geography, a town of France, in the department of the Indre; 11 miles N.W. of Issoudun. N. lat. 47° 7'. E. long. 1° 54'.

VATERIA, in Botany, was so named by Linnaeus, in honour of Abraham Vater, professor of Medicine at Wittenberg, and author of Catalogue Horti Wittenbergensis, (a mere catalogue,) as well as of some botanical dissertations, on the Ballam of Mecca, on Hippomane, &c. This gentleman was born in 1683, and died in 1751. He succeeded his father in the professorship, who died in 1752, aged eighty-one, and was also a naturalist. Linn. Gen. 269. Schreb. 359. Mart. Mill. Dict. v. 4. Julf. 258. Lamarck Ill. t. 475.—Clafs and order, Polyandra Monogyna. Nat. Ord. akin to Gutiferæ, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, in five acute segments, permanent, at length reflexed. Cor. Petals five, ovate, thick, entire, spreading. Stam. Filaments numerous, very short; anthers vertical, sgl-flaped, much longer than the filaments, with two capillary points. Filg. German superior, roundish; fylle simple, short; frigga capitate. Peric. Capsule turbinate, coriaceous, seated on the reflexed calyx, marked with three furrows, separating into three valves, with one cell. Seed solitarly, ovate, with a reddish skin.


Obf. Retzius and Vali have removed this plant to Eleo- carpus, fee that article; but without giving any sufficient reason. On the contrary, they describe the petals as entire; nor have they thrown any light upon the fruit, which, as de- scribed in the Hortus Malabaricus, cannot accord with Eleocarpuis. The large figure, on the right hand, in that book, cannot be reconciled with the rest, unless it be a seed vegetating. Jussieu seems staggered as to the character of this fruit, by finding the rudiments of three seeds in the germen. But this may very well be, and yet only one may ever come to perfection. The fame learned author remarks, that Lin- naeus, in his Syllena, attributes three seeds to Vateria. This is true; but we believe it a typographical error, originating in the tenth edition of Syll. Nat. especialy as the synoptical table, at the head of the clas, remains with the character of a single seed. This contradiction, whichever of the two characters be correct, is heedlessly perpetuated through every following edition. On the whole, there appears more reason to retain than to abolish the genus in question.

1. V. indica. Copal Vateria. Linn. Sp. Pl. 734. (Eleo- carpus copalliferus; Retz. Obs. fae. 4. 27. Vahl Symb. v. 3. 67. Willd. n. 5. Pœno; Rheed. Hort. Malab. v. 4. 33. t. 15.)—Native of Malabar and Ceylon. A tall and handsome tree, generally sixty feet high, with wide extended branches, and a thick bark, which when wounded discharges a clear, pellucid, fragrant resin, acidic and bitter to the taste, at length becoming yellow and brittle like glafs. This, according to Kernig, is one kind of Copal; see that article. Perfons experienced in the ufe of this gum, fo useful for varnishing anatomical preparations, know that there are, as Kernig says, several different things imported under the same name, which are not all equally soluble, even in oil of lavender. The blooms of this tree are alternate, flaked, a span long, elliptical, acute, coriaceous, entire, smooth. Flowers in large terminal, downy panicles, white with yellow flumens; their fcent feet, like a lily. Fruit the size of a walnut in its green coat, swelling and blunt at the extremity, dark purple; its kernel white, bitterish and rather astringent, inclosed in a reddish skin, like that of a filbert. This de- scription, taken from the Hortus Malabaricus, is precise; and as nothing is faid of any hard shell, we do not fee bow the fruit can agree with that of Eleocarpus. The above-mentioned kernel, triturated with hot water, is reckoned strengthening to the stomach, and is given to flop vomiting or nausea.

Having formerly examined at Sir Joseph Banks's a specimen of Vateria, in order to dilugnith this genus from Vatica, (fee that article,) we have corrected the generic char- acters from observations then made, particularly respecting the anthers, of which Retzius and Vahl have also given a faithful account. Linnaeus had no specimen, but described the genus from one in Hermann's herbarium, now at Sir Joseph Bank's. Vahl is surely mistaken in faying the corolla and fruit agree with Eleocarpus!

VATES, in Mythology, the name of a clas of Druids.

VATII, in Geography, a town on the north coast of the island of Samos, in a bay called the Gulf of Vathi. N. lat. 37° 40'. E. long. 26° 54'.

VATIIA, or Berrathi, anciently Tyrins, a town of European Turkey, in the Morea; 16 miles N.E. of Napoli di Romani.

VATI, a town of the island of Sifanto. N. lat. 36° 57'. E. long. 24° 40'.

VATICA, in Botany, an unexplained name of Linnaeus, apparently derived from the same source as vaticination, a prophesying. Hence the writer of the present article ventured to fuggit, as a query, whether the plant might have any superstitious use among the Chinese, from whole country it is faid to have been brought. This conjecture appears in the form of a general opinion in De Theis, strengthened by a reference to Boehmer's Lexicon, p. 268, a book not within our reach. Notwithstanding all this, there is great doubt whether the plant comes from China, the specimens being marked India, just like many others, known to have been received from Java by Linnaeus. In fact, these specimens are fo like Vateria (fee that article) in appearance and char- acter, that if it were pooffible to fuppofe the anthers could vary fo remarkably, we should fuppofe these plants might be only sexual differences of one species. Having flared this difficulty without having the means of overcoming it, we proceed to defcribe Vataea.—Linn. Mant. 2. 152. Schreb. Gen. 318. 831. Willd. Sp. Pl. v. 2. 847. Mart. Mill. Dict. v. 4. Sm. Plant. Ic. 36. Julf. 259. Lamarck Ill. t. 397.—Clafs and order, Dodecandria Monogyna. Nat. Ord. akin to Gutiferæ, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, in five deep, erect, ovato-lanceolate, acute segments. Cor. Petals five, fylline, obovate, entire, thrice the length of the calyx, folded over each other, in some flowers to the left, in others to the right; their inner surface smooth; outer, in the exposed half, hoary. Stam. Filaments none; anthers fifteen, fylline, three on the bafe of each petal, small, ovate, smooth, of four
four obtuse cells, the two outer cells terminated by a small, intermediate, upright spine, the two inner but half as long, without any spine. *Pij. German superior, conical, with five angles, obtuse, hoary; fylle cylindrical, with five angles, twilled; fligma flathithi, obscurely three-lobed. *Petric, unknown, but the gemem has three cells, with the rudiment of a solitary feed in each.


Wild. n. 1. Sm. Plant. t. 56.—Native of China, according to Linneus, but his authority, as we have said, does not appear. This seems to be a tree, very near *Vateria indica, from which it chiefly differs in the number and form of the flaments. As to the fruit, Jussieu's having found three cells and as many seeds, in the gemem of *Vateria, renders the supposed distinction in the ripe fruit very doubtful. The leaves, inflorescence, &c. discover no difference, and the flower-flalks and calyx, as well as flower-flalks, are clothed with the same fine, short, clofe, hoary pubeffence, in both. It is much to be wished that some East Indian botanift would clear up these doubts refpefting two very fine, and liitherto little-known plants. We must add, that if this be *Vateria, nothing can be more diftinét in its petals from Elaeocarpus; for instead of the thin texture, and curiously incarinated margin, appropriate to the latter, their thick undivided fubflance, and partial hoarfines at the back, prove that these genera ought never to be confounded together.

Vatica, in Geography, a sea-port town of European Turkey, in the Morea, situated in a large bay, to which it gives name; 44 miles S.E. of Misftra.

VATICAN, Vatica, is properly the name of one of the seven hills on which Rome flands; on the foot of this is the famous church of St. Peter, hence called the Vatican; and a magnificent palace of the pope, which has the fame denomination. Hence arise divers figurative expreffions; as the thunderbolt of the Vatican, q. d. the pope's anathema, &c.

The word, according to Aulus Gellius, is derived from vatricium, prophecy; by reaon of the oracles and predictions which were used to be delivered there by the inspiration of an ancient deity, called Vaticanus; who was suppoTed to unbind the organs of speech in new-born children; and whom others will have to be no other than Jupiter, confidered in that capacity.

Vatican, The Library of the, is one of the most celbrated in the world: it is particularly remarkable for its manuscripts. It was first erected, according to Petaus (Rat. Temp. lib. ix. cap. 9) by pope Nicholas V., who succeedcd to the papal chair in 1447. It was re-established, after the books had been difpersed, under the pontificate of Calixtus III., by Sixtus IV.; and after having been almost entirely destroyed by the army of Charles V. it was not only restored to its former flate by Sixtus V., but greatly enriched with books and manuscripts. It was finally fixed in the Vatican, under the pontificate of Martin V.

Towards the beginning of the 17th century, it was greatly augmented by the addition of that of the elector palatine. It is open to all the world three or four times a week. In it are shown a Virgil, Terence, &c. above a thousand years old; as also the manuscript on which the edition of the Septuagint was made; and abundance of rabbinical manuscripts.

Vatican Manuscript, is one of the most celebrated manuscripts of the Greek version of the Bible now extant in the world. It was polished at Rome by cardinal Carafa, at the command of Sixtus Quintus, in 1587; and in the preface, it is said to have been written ante millenium ducen-
VAVAO, or Vavou, in Geography, one of the Friendly islands, in the South Pacific ocean, seen by Perouze in 1787, who says, "this island, which Capt. Cook never visited, is almost equal in size to Tongataboo, and has the advantage of being never in want of water, with a good harbour."

It had been before discovered by the Spaniard pilot Maurelle, and with a number of islands almost as considerable as those already explored by Capt. Cook, which he called the islands of Majorca. S. lat. 18° 34' of the western point. See Tonga.

VAVASOR, Valvasor, Vavasour, or Vavasour, in our Ancient Cymry, a diminutive of vaffal, or vassal; signifying a vaffal or a vassal, or one who held a fee of another vassal.

Yet Camden, and others, hold vavasor to be a dignity, next below that of a baron: he adds, that the word is formed of vas fertum ad valitudinem, a vessel chosen for safety and health. Others derive it à valesis, quasi obligatus fit adfere ad vassus domini, vel indignis fuit eam intrare; as being a peron obliged to wait at his lord's door, or as unworthy to enter thereat; but this etymology is ridiculous enough.

Du-Cange distinguishes two sorts of vassals under this denomination: the great, called vassuferes, who held of a king; such were counts and barons; and the lesser, called vavafonii, who held of the former.

The vavafortes are mentioned by our ancient lawyers as viri magna dignitatis; and Sir Edward Coke speaks highly of them. But they are now quite out of use; and our legal antiquarians are not agreed upon even their original or ancient office.

VAVASORY, Vavasoria, the quality of the land, or fee held by a vavasor.

"Quod dicitur de baronia non eft observandum in vavaforia, vel allis minoribus feclis quam baronia, quia caput non habent ficut baronia." Bract. lib. ii. cap. 39.

There are vafe vavafortes, and frank or noble vavafortes: according as it pleased the lord to make his vavasor. Vafe vavafortes are those for which the lord of the fee owes fummage, light-horse, rents, or other services. Free vavafortes are such as are exempt from these services.

VAVASSEUR, Francis, in Biography, was born in 1605, at Paray, in the diocese of Autun; and entering into the society of the Jesuits in 1621, and acting as regent in the schools for some years, he was called to Paris to occupy the chair of positive theology, the duties of which he discharged honourably for thirty-fix years; and he died in this city in 1681, aged seventy-six years. He has been reckoned one of the most elegant and correct Latin writers, and wrote several theological pieces, some against Jansenius, and one of a singular subject, "On the personal Beauty of Jesus Christ," and also poems chiefly on sacred subjects. The work which has chiefly distinguished him is a treatise "De Ludicara Dictione," or on the burlesque style, dedicated to Balzac. He also wrote a treatise "On the Epigram," and "Remarks on the Poetics of Father Rapin." Moreri.

VAUBAN, Sebasfian le Prestre, Seigneur de, marshal of France, and an eminent engineer, was born in 1633, and began to bear arms at the age of seventeen under the prince of Conde, general of the Spanish army. Being taken prisoner by a French party, he was engaged by cardinal Mazarin on the royal side, and employed in 1653 at the second siege of St. Menehould, by which it was recovered to France. He also served as engineer in the five following years at several other sieges. After the peace of the Pyrenees, he was employed in demolishing some places and fortifying others; and he also fuggled a variety of ideas, by the maturity and development of which he contributed in a high degree to the improvement of the science of fortification. On the renewal of the war in 1667, he conducted several sieges, at which Lewis XIV. attended in person, and he was commissioned to fortify several places, and in 1668 nominated governor of the citadel of Lille, which he had constructed. After the peace of Aix-la-Chapelle, he visited Piedmont, and gave designs to the duke of Savoy for some important fortresses. In the war of 1672 he again distinguished himself, particularly at the siege of Maelrich, in which he introduced his famous method of attack by parallels and places of arms; and also on other occasions, when an opportunity offered for the display of his inventive genius. In carrying his schemes into execution he was anxious for saving life, and therefore preferred a slow and regular advance in sieges. The peace of Nimfeuen afforded him leisure for fortifying towns; and of these, his master-piece was the port of Dunkirk. On the commencing of war, he again resumed his active services, and had the honour of taking Luxembourg, which was regarded as impregnable. Upon the whole, he fortified one hundred old places, constructed thirty-three new fortresses, and had the principal direction of fifty-three sieges. In recompence of his various exertions, he was advanced to several petty honours, and in 1703 appointed marshal of France. At Dunkirk, whither he was sent in a state of great alarm, he died of a fluxion in his lungs, in March 1707, at the age of seventy-four years.

The character of Vauban, as a man and a citizen, was no less estimable than his superior talents and achievements in his professional capacity. Loyal and faithful to his sovereign, he studied to serve more than to please, and he manifested on all occasions an inviolable attachment to truth. As a liberal and zealous patriot, he made such observations, and collected such facts in his various travels, as contributed most effectually to the improvement and prosperity of his country. These were comprised in twelve large MS. volumes, which he modestly denominated "Mes Œuvrées," and Fontenelle observes of him in relation to these, that if all his projects could be executed, his "idlenes" would be more useful than his labours. In 1699, he was nominated an honorary member of the Academy of Sciences. The following works were either written by himself, or in conference of ideas which he suggested: viz. "Manière de Fortifier, par M. de Vauban, mille en ordre par le Chevalier de Cambray," Amft. 1689 and 1692, printed at Paris under the title of "L'Ingénieur Français," with notes by Hectbert, professor of mathematics; and afterwards with notes by the Abbé du Fay; "Nouveau Traité de l'Attaque et de la Defence des Places, suivant le Systéme de M. de Vauban," par M. Despréz de Saint-Sevin," Paris 1736; "Essais fur la Fortification, par M. de Vauban," Paris 1740; "Projet d'un Dime Royale," Rouen, 1707, often reprinted. This last work is attributed by Voltaire to Bois-Guillebert, author of a "Téfantment Politique" in the name of Vauban. Fontenelle Eloge. Moret.

VAUBECOURT, in Geography, a town of France, in the department of the Meuse; 9 miles N. of Bar-le-Duc.

VAUCHERIA, in Botany, is so named by M. Decandolle, in his Flore Française, in honour of the discoverer of the genus, the Rev. M. Vaucher of Geneva, author of an excellent work in quarto, entitled Histoire des Conflernes d'Eau douce, where this genus is established by the name of Eeo-ferma. The latter appellation has very properly given way to the above, previously chosen by M. Decandolle.—Sm. Engl. Bot. v. 25. 1765. "Decand. Rapport fur les Con-


1. V. suffult. Seifille-fruited Vauclera. Engl. Bot. t. 1765. (Ectoptera suffult; Vauch. Conf. 25. t. 2. f. 7. Confera veficata; Dillw. Conf. t. 74, without the anther. Ceramium cefitum; Roth Catal. v. 3. 170).—Floating. Capsules in pairs and solitary, feiffle on each side of the anther.—Found floating on the surface of pools, in large green patches, about February; and confifting of capillary, branched, smooth, rather claffic, tubular filaments, filled with a green pulpy fubftance, which separates in oblong portions, giving the filament a jointed appearance. Capsules lateral, feiffle, pellucid, commonly in pairs, each containing one large green feed, and having next to them an awl-shaped body, affeeted by Vaucler to be the anther. Yet sometimes this fbody feems to shoot out into a branch. Veficles are often found on the branches, perhaps of the nature of galls, inhabited by the aquatic animacule called by Muller Cyclops Lapula, in coniderable numbers, with one dark-coloured animal befoles.

2. V. geminata. Twin-flalked Vauclera. Engl. Bot. t. 1766. (Ectoptera geminata; Vauch. Conf. 25. t. 2. f. 5).—Floating. Capsules in pairs and solitary, on opposite partial flalks, growing out of one common flalk with the anther.—Sent by Mr. W. Borrer, along with the preceeding, from Suffex. The habit is the fame in both, but the frutification, furnihered with partial flalks, and with a common flalk for both organs, appears to afford a good specific character. Some botanists nevertheless, and among them, if we mistaft not, Mr. Dillwyn, confider these two plants as mere varieties of each other.

3. V. velutina. Velvet Vauclera. (Confera velutina; Engl. Bot. t. 1556. Dillw. Conf. t. 77. Byfius velutina; Linn. Sp. Pl. 1638. B. tenerrima viridis, velutum referens; Dill. in Rall Syn. 56. Mouc. 7. t. 1. f. 14. B. terreliris viridis herbaee et mollifima, filamentis ramosis et non ramosis; Mich. Gen. 211. t. 89. f. 5).—Erect, tufted. Filaments beaded, somewhat rigid. Capsules fefille.—This covers the earth, in moft fhashy places, with a moft beautiiful fine green velvet carpet, fragrant like feveral of the Jungermannias, even for a long time after it is dried. It appears to be perennial, occurring in fummer as well as winter, but has been thought more common than it really is, because Dillenius and others have confounded with this plant a much more general one, Confera muralis, Engl. Bot. t. 1554, which is proflrate, refting with fatin rather than velvet, and has no fweet fcent. M. Vaucler is our authority for re-moving this species hither. Micheli has but imperfectly figured the capfules, and in fuch a manner that they may belong either to thofe Conferae which make Roth's genus of Ceramium, or to Vauclera. Of the anther we know nothing.

We have here limited ourselves to the British species, which may poflibly prove but a small part of the genus, when the fubject has been sufficiently examined.

VAUCCLAIN, L.E. in Geography, a town of the ifland of Martinico, fituated in a bay on the N.E. coaft. N. lat. 14° 36'. W. long. 66° 46'.

VAUCLUSE, a town of France, in the department of the Doubs; 8 miles S.W. of St. Hypolite.

VAUCLUSE, formerly Venaisin, and the principality of Orange, on the left hand of the Rhone, in N. lat. 44°, one of the twelve departments of the S.E. region of France, bounded on the N. by the departments of the Drôme and Ardéche, on the E. by the department of the Lower Alps, on the S. by the department of the Mouths of the Rhone, and on the W. by that of the Gard. It derives its appellation from the fountain of Vaucluse, (see Fontaine de Vauclus, which is the fource of the river Sorgues, and made memorable by the near residence of Petrarch and Laura. Its territorial extent is 3700 kilometres, or 186 square leagues, and its population consists of 190,180 inhabitants. It is divided into 4 circles or districts, 22 cantons, and 150 communes. The circles are, Orange, including 54,293 inhabitants. Avignon, 47,351; Carpentras, 39,714; and Apt, 48,822 inhabitants. According to Haffenratz, its length in French leagues is 15, and its breadth 10; its circles are 4, its cantons 52, and its population consists of 200,500 persons. Its capital is Avignon. Its contributions, in the eleventh year of the French era, amounted to 1,367,701 francs; and its charges, administrative, judiciary, and for public instruction, were 227,109 francs, 14 cents. This department consists of plains, marshes, gentle eminences, and hills. Mont-Ventoux is upwards of 6000 feet above the level of the sea. The soil is various, and indifferently cultivated. The products are grain, silk, fruits, and roots. In this department coal is impregnated with sulphur, a few metallic subfiances, potter's-earth, mineral springs, &c.

VAUCLUSE, a town of France, and principal place of a district, in the department of the Meuse; 8 miles N.E. of Gondrecourt. N. lat. 48° 36'. E. long. 5° 44'.

VAUD, PAYS DE, a country of Switzerland, of which travellers and historians speak with rapture, particularly of that part which borders on the lake of Geneva. It is almost wholly a gradual ascent from the edge of the lake, richly laid out in vineyards, corn-fields, and luxuriant meadows, and chequered with continued hamlets, villages, and towns: the shores are generally of the clearest gravel, and the water of the finest transparency. This country is one of the two great divisions into which the canton of Berne is divided; the other being the German district. The Pays de Vaud, after the decline of the Roman empire, made a part of the kingdom of Burgundy, from which it fell to the empire of Germany, under which the dukies of Zaringen held it as a fief, and at the extinction of that family, it became annexed to the eftates of the counts of Savoy. It was conquered from the house of Savoy by the canton of Berne in 1536, and in this year the reformation was introduced. From that period the whole Pays de Vaud, excepting the common baililages of Grenchon, Orbe, and a small portion of which was ceded to Friburgh, has been subject to Berne, and forms a part of that canton. The German district was gained by conquest from the eftates of the empire. In each of these divisions justice is administered and taxes regulated by peculiar laws and customs. Each division has its treasurer and chamber of appeal resident in the capital; the chamber of appeal belonging to the Pays de Vaud judges in the last resort; but the inhabitants of the German district may appeal to the sovereign council. During the French revolution, the Pays de Vaud was separted from the canton of Berne, and formed into an independent republic under the protection of France, in January 1798. In the new division of Switzerland, it forms the canton or department of Leman, of which Laufanne is the capital. The Pays de Vaud is estimated to be about 60 miles long, and as many broad; bounded on the N. by the county of Neuchatel, on the E. by the canton of Friburgh, on the S. by the lake of Geneva and the river Rhone, and on the W. by France. It includes the towns and baililages of Lausanne, Yverdon, Mondon, Avenches, Vevey, Morges, and several others.

VAUDE-
VAUDEMONT, a town of France, in the department of the Meurte; 4 miles S. of Vezelise.

VAUDEVILLE, a song sung in the streets by ballad-singers, the subject of which is generally jocose or factitious. The origin of this little kind of poem is traced up to the time of Charlemagne. But according to the more general opinion, it was invented by a certain man of the name of Baffelin, Foulon de Vire in Normandy; and in order to dance, as people used to assemble in the Val de Vire, they were called Vaux de Vire, and afterwards, by corruption, Vauvileil.

The air of these Vaudevilles is generally very unmusical. But as people merely listen to the words, the tune only helps to enforce the voice and render the words more audible. But, as music, there is in general neither taste, melody, nor measure in their tunes. The Vaudevile, with respect to the words, belongs exclusively to the French, and they are sometimes very piquant and pleafant. Rouleau.

VAUDIER, in Geography, a town of France, in the department of the Stura, late in the province of Coni; 5 miles S.E. of Demont.

VAUDOIS, Valdenses, or Waldenses, in Ecclesiastical History, a name given to a sect of reformers, who made their first appearance about the year 1160.

Of all the sects that arose in this century, none was more disdained by the reputation it acquired, by the multitude of its votaries, and the tellimony which its bitterest enemies bore to the probity and innocence of its members, than that of the Waldenses, so called, says Moheim, from their parent and founder Peter Waldis, or Valdus. They were also called Leonitis, from Leonis, the ancient name of Lyons, where their feast took its rise. The more eminent persons of that sect manifested their progress towards perfection by the simplicity and meanness of their external appearance: hence, among other things, they wore wooden shoes, which, in the French language, are termed pagots, and had imprinted upon these shoes the sign of the cross, to distinguish themselves from other Christians; and on these accounts they acquired the denomination of Saccatois and Infiikatais.

The origin of this famous sect, according to Moheim, was as follows: Peter, an opulent merchant of Lyons, surnamed Valdus, or Valdus, from Vaux, or Waldum, a town in the marquisate of Lyons, being extremely zealous for the advancement of true piety and Christian knowledge, employed a certain priest, called Stephanus de Evifa, about the year 1160, in translating from Latin into French the four Gospels, with other books of Holy Scripture, and the most remarkable sentences of the ancient doctors, which were so highly esteemed in this century. But no sooner had he perused these sacred books with a proper degree of attention, than he perceived that the religion, which was now taught in the Roman church, differed totally from that which was originally inculcated by Christ and his apostles. Struck with this glaring contradiction between the doctrines of the pontiffs, and the truths of the Gospel, and animated with zeal, he abandoned his mercantile vocation, distributed his riches among the poor (whence the Waldenses were called poor men of Lyons), and forming an association with other pious men, who had adopted his sentiments and his turn of devotion, he began, in the year 1180, to assume the quality of a public teacher, and to instruct the multitude in the doctrines and precepts of Christianity.

Bexa, and other writers of note, who are followed by Dr. Maclean, the learned translator of Moheim's History, give different accounts of the origin of the Waldenses; alleging, that it seems evident from the best records, that Valdus derived his name from the true Waldenses of Piedmont, whose doctrine he adopted, and who were known by the names of Vaudois and Valdenfes, before he or his immediate followers exiled. If the Waldenses or Waldenfes had derived their name from an eminent teacher, it would probably have been from Valdo, who was remarkable for the purity of his doctrine in the eleventh century, and was the contemporary and chief counsellor of Berengarins. But the truth is, that they derive their name from their valleys in Piedmont, which in their language were called vaus, and hence Valdois, their true name; hence also Peter, or, as others call him, John of Lyons, was called in Latin Valdus, because he had adopted their doctrine; and hence the term Valdenses or Waldenfes, used, by those who write in English or Latin, in the place of Valdois. The bloody inquisitor, Reinierus Sacco, who exerted such a furious zeal for the destruction of the Waldenses, lived but eighty years after Valdus of Lyons, and must, therefore, be supposed to know whether or not he was the real founder of the Waldenses or Leonitis; and it is remarkable, that he speaks of the Leonitis as a sect that had flourished above five hundred years; and mentions authors of note to make their antiquity ascend to the apostolic age. See the account given of Sacco's book by the Jesuit Groser, in the Bibliotheca Patrum. See also Leger's Histoire Gen. des Eglises Vaudoises, cap. 2. 25, 26, 27.

But to return to the history of Peter Valdus. Soon after Peter had assumed the exercise of his ministry, the archbishop of Lyons, and the other rulers of the church in that province, vigorously opposed him. However, their opposition was unsuccessful; for the purity and simplicity of that religion which these good men taught, the spotless innocence that shone forth in their lives and actions, and the noble contempt of riches and honours, which was conspicuous in the whole of their conduct and conversation, appeared so engaging to all such as had any sense of true piety, that the number of their followers daily increased. They accordingly formed religious assemblies in France, and afterwards in Lombardy, from whence they propagated their sect throughout the other provinces of Europe with incredible rapidity, and with such invincible fortitude, that neither fire, nor sword, nor the most cruel inventions of merciless perfecution, could damp their zeal, or entirely ruin their cause.

The attempts of Peter Waldis, and his followers, were neither employed nor designed to introduce new doctrines into the church, nor to propose new articles of faith to Christians. All they aimed at was, to reduce the form of ecclesiastical government, and the manners both of the clergy and people, to that amiable simplicity, and primitive sanctity, that characterized the apostolic ages, and which appear so strongly recommended in the precepts and injunctions of the divine Author of our holy religion. In consequence of this design, they complained that the Roman church had degenerated, under Constanine the Great, from its primitive purity and sanctity. They denied the supremacy of the Roman pontiff; and maintained, that the rulers and ministers of the church were obliged, by their vocation, to imitate the poverty of the apostles, and to procure for themselves a subsistence by the work of their hands. They considered every Christian as, in a certain measure, qualified and authorized to instruct, exhort, and confirm the brethren in their Christian course, and demanded the restoration of the ancient penitential discipline of the church, i.e. the expiation of transgressions by prayer, fasting, and alms, which the new-invented doctrine of indulgences had almost totally abolished. They, at the same time, affirmed, that every pious Christian was qualified and entitled to prescribe to the penitent the kind or degree of satisfaction or expiation.
expiation that their transgressions required; the confession made to priests was by no means necessary, since the humble offender might acknowledge his sins, and testify his repentance to any true believer, and might expect from such the counsel and admonition which his case demanded. They maintained, that the power of delivering sinners from the guilt and punishment of their offences belonged to God alone; and that indulgences, of consequence, were the criminal inventions of fordid avarice. They looked upon the prayers and other ceremonies that were instituted in behalf of the dead, as vain, useless, and absurd, and denied the existence of departed souls in an intermediate state of purification; affirming, that they were immediately upon their separation from the body, received into heaven, or thrust down to hell. These, and other tenets of a like nature, composed the system of doctrine propagated by the Waldenses. It is also said, that several of the Waldenses denied the obligation of infant-baptism, and that others rejected water-baptism entirely; but Wall has laboured to prove, that infant-baptism was generally practiced among them. Hist. of Infant-Baptism, p. 387, &c.

Their rules of practice were extremely austere; for they adopted, as the model of their moral discipline, the sermon of Christ in the mount, which they interpreted and explained in the most rigorous and literal manner, and, consequently, prohibited and condemned in their society all wars, and suits of law, and all attempts towards the acquisition of wealth, the inflicting of capital punishments, self-defence against unjust violence, and oaths of all kinds.

The government of the church was committed by the Waldenses to bishops, called also majorales or elders, profbyters, and deacons; for they acknowledged that these three ecclesiastical orders were instituted by Christ himself. But they thought it absolutely necessary that these orders should resemble the apostles of Christ, and be, like them, unlearned, poor, and furnished with some laborious trade or vocation, in order to gain by constant industry their daily subsistence; and indeed most of the Waldenses gained their livelihood by weaving; whence in some places the whole fact was called the fact of the weavers. The laity were divided into two classes, viz., the perfect and the imperfect Christians: the former divested themselves of all worldly possessions, manifested in the wretchedness of their apparel, their extreme poverty, and emaciated their bodies by frequent fasting; the latter were less austere, and approached nearer to the method of living generally received, though they abstained from all appearance of pomp and luxury.

The Waldenses were not without intrigue divisions; for such of them as lived in Italy differed considerably in opinion from those who dwelt in France, and the other European nations. The former considered the church of Rome as the church of Christ, though much corrupted; they acknowledged, moreover, the validity of its seven sacraments, and solemnly declared they would continue always in communion with it, provided that they might be allowed to live as they thought proper, without molestation or restraint. The latter affirmed, on the contrary, that the church of Rome had apostatized from Christ, was deprived of the Holy Spirit, and was in reality, that whore of Babylon mentioned in the Revelation of St. John. They were also divided in their sentiments concerning the possession of worldly goods. In the fourteenth century, the Waldenses, though they were everywhere exposed to the fury of the inquirers and monks, baffled all the attempts that were made to extirpate them. Many of them fled out of Italy, France, and Germany, into Bohemia, and other adjacent countries, where they afterwards associated with the Hussites, and other separatists from the church of Rome. In the fifteenth century theyubmitted in several European provinces, more especially in Pomerania, Brandenburg, the district of Magdeburg, and Thuringia, where they had a considerable number of friends and followers; though, it is said, that many adherents of this sect, in the countries now mentioned, were discovered by the inquirers, and delivered over by them to the civil magistrates, who committed them to the flames. After the Reformation, in the sixteenth century, the descendents of the Waldenses, who lived shut up in the valleys of Piedmont, were naturally led, by their situation in the neighbourhood of the French, and of the republic of Geneva, to embrace the doctrines and rites of the reformed church. So far down, however, as the year 1630, they retained a considerable part of their ancient discipline and tenets; but being much reduced by the plague in that year, and deprived of many of their clergy, they applied to the French churches for spiritual succour; and the new teachers, sent from thence, introduced several changes into the discipline and doctrine of the Waldenses, and rendered them conformable, in every respect, to those of the Protestant churches in France. In this century they suffered much from the persecution of Phillibert Emanuel, duke of Savoy, who at the solicitation of the pope resolved to force his subjects to return to the communion of the church of Rome; and in 1561 sent a Dominican friar, as an inquisitor, with forces to effect his purpose. After ineffectual supplications, they took up arms, and so far prevailed, after enduring very severe distress, as to obtain some degree of liberty and peace.

During the greatest part of the seventeenth century, those of them who lived in the valleys of Piedmont, and who had embraced the doctrine, discipline, and worship of the church of Geneva, were oppressed and persecuted, in the most barbarous and inhuman manner, by the ministers of Rome. This persecution was carried on with peculiar marks of rage and enormity in the years 1655, 1656, and 1656, and seemed to portend nothing less than the total extinction of that unhappy nation. The most horrid scenes of violence and bloodshed were exhibited in this theatre of papal tyranny; and the few Waldenses that survived, were indefatigable for their existence and support to the intestine made for them by the English and Dutch governments, and also by the Swifs cantons, who solicited the clemency of the duke of Savoy in their behalf. Molinie's Eccl. Hist. vol. iii. iv. Eng. ed. 8vo. Dupin's Eccl. Hist. of the Sixteenth Century, vol. ii. p. 414.

VAUDREVANGE, in Geography, a town of France, in the department of the Meurte, on the Sarre; formerly a confederate town, but ruined by the wars in Lorraine; 3 miles N. of Sar-Louis.

VAUDREUIL, a town of France, in the department of the Essonne, on the Sarthe; formerly a confederate town, but ruined by the wars in Lorraine; 4 miles W. of Meurte.

VAUGELAS, in Biography. See Claude Faure.

VAUGIRARD, in Geography, a town of France, in the department of Paris; 2 miles S.W. of Paris.

VAUGNERAY, a town of France, in the department of the Rhone and Loire; 8 miles W.S.W. of Lyons.

VAULT, FORMIX, in Architecture, an arched roof, so contrived, as that the several ranges of which it consists, do, by their disposition, sustain each other.

Vaults are to be preferred, on many occasions, to soffits, or flat ceilings, as they give a greater rife and elevation; and, besides, are more firm and durable.
The ancients, Salmasius observes, had only three kinds of vaults: the first, the *forma*, made cradle-wise; the second, the *tessellato*, tortoise-wise, called by the French *cul de four*, or oven-wise; the third, the *contre*, made shell-wise.

But the moderns subdivide these three Arts into a great many more, to which they give different names, according to their figures and use; some are circular, others elliptical, &c.

The epochs of some, again, are larger, and others less portions of a sphere: all above hemispheres are called high, or surmounted vaults; all that are less hemispheres, are low, or unfixed vaults, &c.

In some, the height is greater than the diameter; in others, it is less: there are others, again, just flat, only made with haunches; others oven-like, or in form of a *cul de four*, &c. and others growing wider, as they lengthen, like a trumpet.

Of vaults, some are single, others double, cleft, diagonal, horizontal, overriding, dependent, angular, oblique, pendent, &c. There are likewise *Gothic* vaults, with pendencives, &c.

**Vaults, Majler**, are those which cover the principal parts of buildings; in contradiction to the left, or subordinate vaults, which only cover some little part, as a passage, a gate, &c.

**Vault, Double**, is such an one as, being built over another, to make the exterior decoration range with the interior, leaves a space between the convexity of the one and the concavity of the other: as in the dome of St. Paul's at London, and that of St. Peter's at Rome.

**Vaults with Compartments**, are such whose sweep, or inner face, is enriched with pannels of sculpture, separated by pilasters: these compartments, which are of different figures, according to the vaults, and are usually gilt on a white ground, are made with stucco, or brick vaults; as in the church of St. Peter's at Rome; and with plaiter, on timber vaults.

**Vaults, Theory of.** A semicircular arch, or vault, standing on two piers, or impost, and all the stones that compose it being cut and placed in such manner, that their joints, or beds, being prolonged, do all meet in the centre of the vault; it is evident, all the stones must be in form of wedges, i.e. they must be wider and bigger at top than at bottom; by virtue of which they fulfill each other, and mutually oppose the effort of their weight, which determines them to fall.

The stone in the middle of the vault, which is perpendicular to the horizon, and is called the *key* of the vault, is sustained on each side by the two contiguous stones, just as by two inclined planes; and of consequence, the effort it makes to fall, is not equal to its weight.

But still that effort is greater, as the inclined planes are less inclined; so that if they were infinitely little inclined, i.e. if they were perpendicular to the horizon, as well as the key, it would tend to fall with its whole weight, and would actually fall, but for the mortar.

The second stone, which is on the right or left of the key-stone, is sustained by a third; which, by virtue of the figure of the vault, is necessarily more inclined to the second, than the second is to the first; and, of consequence, the second, in the effort it makes to fall, employs a less part of its weight than the first.

For the same reason, all the stones, reckoning from the key-stone, employ still a less and less part of their weight to the last; which resting on an horizontal plane, employs no part of it's weight; or, which is the same thing, makes no effort to fall; as being entirely supported by the impoil.

Now, in vaults, a great point to be aimed at is, that all the several stones make an equal effort in order to fall: to effect this, it is visible, that as each (reckoning from the key to the impost) employs a still less and less part of its whole weight, the first, for instance, only employing one-half; the second, one-third; the third, one-fourth, &c.; there is no other way to make those different parts equal, but by a proportionate augmentation of the whole, i.e. the second stone must be heavier than the first; the third, than the second, &c. to the last; which should be vastly heavier.

M. de la Hire demonstrates what proportion is, in which the weights of the stones of a semicircular arch must be increased, to be in equilibrio, or to tend with equal forces to fall; which gives the firmest disposition a vault can have.

Before him, architects had no certain rule to conduct themselves by; but did all at random. Reckoning the degrees of the quadrant of the circle from the key-stone to the impost; the extremity of each stone will take up so much the greater arch, as it is farther from the key.

M. de la Hire's rule is, to augment the weight of each stone above that of the key-stone, as much as the tangent of the arch of this stone exceeds the tangent of the arch of half the key. Now, the tangent of the last stone, of necessity, becomes infinite, and of consequence, its weight should be fo too; but as infinity has no place in practice, the rule amounts to this, that the last stones be loaded as much as possible, that they may the better resist the effort which the vault makes to separate them; which is called the *floor*, or *drift*, of the vault.

M. Parent has since determined the curve, or figure, which the extrados, or outside of a vault, whose intrados, or inside, is spherical, ought to have, that all the stones may be in equilibrio. See ARCH.

**Vault, Key of a.** See Key and VOUSSOIR.

**Vault, Reins or Fillings-up of a.** are the sides which furnish it.

**Vault, Pendentive of a.** See PENDENTIVE.

**Vault, Impoll of a.** is the stone on which the first voussoir, or arch-stone of the vault, is laid. See IMPOSTS.

**Vault, in the Manege.** To vault a horse-flooe, is to forge it hollow, for horses that have high and round foles; to the end that the shoe, thus hallowed or vaulted, may not bear upon the sole that is higher than the hoof; but after all, this sort of shoe spoils the feet; for the sole, being tenderer than the shoe, affames the form of the shoe, and becomes every day rounder and rounder. In Mr. Solleyföld's Complete Horfeman, may be seen the true method of shoeing high and round foles. See SHOE and SHOEING.

**Vault, or Volte.** See VOLTE.

**Vault, Going to the.** a term used by sportmen for a hare's taking the ground like a coney, which the sometimes does.

**Vault, Le, in Geography, a town of France, in the department of the Yonne:** 3 miles W. of Avallon.

**VAULX, a town of France, in the department of the Straits of Calais:** 4 miles N.E. of Baupain.

**VAULX MILieux, a town of France, in the department of the Ile de France:** 12 miles N.E. of Vienne.

**VAUNIA, in Ancient Geography, a town of Italy, belonging to the Bucchani.** Potelamy.

**VAUNING, in Mineralogy.** See VAN, VANNING, SHEVEL, and Tin.

**VAUNT, or VANT. See VAN.

**VAUNT-LEGS, among Hunters, a setting of hounds, or beagles, in a readiness where the chase is to pass:** and calling them off before the rest of the kennel come in.
VAUQUELIN, in Biography. See IVETEAUX.

VAUQUELINIA, in Botany, a genus dedicated by M. Correa de Serra, now the Portuguese minister to the United States of America, to the honour of the celebrated French chemist M. Vauquelain, whose discoveries have been extended to the vegetable kingdom. Humboldt and Bonpland, Plantes equinoxeales, falc. 6. De Theis 475. We regret that we are furnished with no further account of this genus, nor with any of its characters.

VAUS, in Geography, a river of West Florida, which runs into the St. Mark, N. lat. 30° 10'. W. long. 84° 36'.

VAUVENARGUES, a town of France, in the department of the Monts of the Romé; 6 miles E.N.E. of Aix.

VAUVERT, a town of France, in the department of the Gard; 9 miles S. of Nîmes.

VAUZ, a small seaport-town of France, in the department of the Channel, on a bay to which it gives name; 9 miles W. of Cherbourg. N. lat. 49° 39'. W. long. 1° 37'.

VAUVILLERS, a town of France, in the department of the Upper Saône; 12 miles N.W. of Luxeuil.

VAUVINCOURT, a town of France, in the department of the Meuse; 5 miles N. of Bar-le-Duc.

VAUX, in Geography, a district of Switzerland, in the Pays de Vaud, between Launanne and Vevey, which contains the two pleasant little towns of Lutry and Cully, with the villages of St. Saphorin and Corfier. This district is entirely hilly, rising abruptly from the lake; above the vineyards are rich meadows and a continued forest. In the church of St. Saphorin is an ancient Roman mile-stone with an inscription, which contains two circumstances often questioned; viz. that the banks of the lake of Geneva, which border this part of Switzerland, were comprised within a Roman province, even so early as the time of Claudius, and also that Aventicum was the chief town of this part of Helvetia; for the mile-stones always referred to the capital of the province in which they were placed, and the distance from St. Saphorin to Avences is nearly 37,000 paces. The inscription is as follows:

TI. CLAVTIUS. DRUSI. F.
CÆS. AUG. GERI.
PONT. MAX. TRIB. FOT. VII.
IMP. XII. P. P. COS. III.
F. A.
XXXVII.

VAUXHALL GARDENS, a well-known place of public amusement in the parish of Lambeth and county of Surrey, which belonged, in 1615, to Jane, widow of John Vaux, between whose two daughters the estate was divided, and passed through various hands, till both moieties were purchased, about the middle of the last century, by Jonathan Tyers, esq. It does not appear at what time this place was first opened for public resort; but we are led to conclude from a paper in the Spectator (No. 388.), and another in the Connoisseur (No. 68.), that it must have been so appropriated in or before the time of Queen Anne. Mr. Tyers, who held the premises on lease many years before he bought the estate, opened the Spring Gardens, as they were then denominated, in 1730, and expended large sums in embellishing them. After his death they fell into the possession of several proprietors, of whom the principal is Mr. Barratt. Thele gardens were, till of late years, opened every evening during a great part of the summer, for the reception of company; but they are now admitted only three times a week. The entertainments consist of music, vocal and instrumental, illuminations, and fire-works, and other exhibitions. See LAMBETH and TYERS.

VAUZ, in Geography, a town of Pennsylvania, on the Susquehanna; 12 miles N.W. of Harrisburg.

VAYHENCE, a town of Wurttemberg, on the Entz, with a castle. This town had formerly counts of its own; 11 miles N.W. of Stuttgart. N. lat. 48° 58'. E. long. 8° 59'.

VAYLOR, a town of Hindoostan, in Barmaul; 11 miles S.S.W. of Namaul.

VAYPAR, a town of Hindoostan, in the province of Madura; 25 miles E. of Coimbatmore.

VAYRES, a town of France, in the department of the Gironde; 3 miles S.W. of Libourne.

VAYU, in Hindoostan Mythology, is a name of the regent of the winds, more commonly called Paeana; (see Vayu.) Vayu is the Eolus of the East. One of the Puranas is named after him, being called Vayu Purana. (See Purana.) Yah is another of his names.

VAYWODE, or Vaiwode. See WAYWODE.

VAZABU, in the Materia Medica, a name by which some authors have called the Acorus Afiticus, or Asiatic sweet-flag.

VAZCUSE, in Geography, a river of Louisiana, which runs into the Mifflin, N. lat. 38° 31'. W. long. 94° 5'.

VAZUA, in Ancient Geography, a town of Africa Propria, between the river Bagrada and the town of Thabraca, according to Poltemy.

UIBALDI, GUIDO, in Biography, an eminent mathematician of noble extraction from a branch of the family of Bourbon, studied under Condamine, and made early as well as rapid proficiency. Mathematics and mechanics were his favorite objects; but in the latter science he published a work, entitled "Mecanicius Liber, in quo hac continentur:— de Libra, Veete, Trochlea, Axe in Peritrochio, Cuneo, Cochlea," Venetii, 1615, fol. In the last work he reduces all machines to the lever, applying the same principle with advantage to some of the other mechanical powers, particularly to the pulley and its combinations. He also explained the structure of the fere of Archimedes, and its application to the rife of water, in a treatise "De Cochlea, Libri quatuor," Venet. 1615, fol. He illustrated the principles and practice of perspective more fully and clearly than other preceding writers had done, but with needls proximity, in his "Perspectiva, Libri sex," Papiling, 1600, fol. His other works, mentioned by Kiltner, are "Guidi Ubaldii e Marchionibus Montes (of the Marquilles del Monte) in duos Archimedes Equiponderant libros Paraphrasia, scholiosis illustrata," Papiling, 1688, fol.; "Probationum Astronomicorum Libri septem," Venet. 1508, fol. The time of his birth and also of his death is unknown, Montuca.

UBAMBA, in Geography, a town of Brail, near the coast of the Atlantic; 80 miles S.W. of Rio Janeiro.

UBARCO, CAPE, a cape on the N.W. coast of the island of Iviça. N. lat. 39° 5'. E. long. 1° 18'.


UBATUBA, in Geography, a river of Brail, which runs into the Atlantic, S. lat. 23° 20'.

UBAYE, a river of France, which runs into the Durance, near Brumun.

UBEDA, a city of Spain, in the province of Jaen, containing 10 parishes, 8 convents, and about 2900 inhabitants. In 1233, Ubeda was taken from the Moors; 3 miles E. of Jaen. N. lat. 38° 31'. W. long. 3° 31'.

UBENITZ,
UBENITZ, a town of Bohemia, in the circle of Prachatitz; 7 miles E. of Prachatitz.

UBERAU, a town of Heife Darmstadt; 6 miles S.E. of Darmstadt.

UBERE, a town of Sweden, in Velt Gotland; 15 miles S.W. of Skara.

UBERLINGEN, a town of Bavaria, in the territory of Ulm; 13 miles S.W. of Ulm.

The burgh of Darmstadt, the Upper Town, and the Hallenberg in the heart of which are vineyards. It contains in it a collegiate church, a house of the order of St. John, a hospital, three convents, and two other churches. Near the town is a good mineral spring. Uberlingen was an imperial town so early as the time of the emperors of Swabia. Charles IV. and Wenceslaus engaged to maintain it in its immediate independence on the empire; but in 1802, it was given to the duke of Baden; 22 miles N.W. of Lindau. N. lat. 47° 45'. E. long. 8° 49'.

UBERSKO, a town of Bohemia, in the circle of Chrudim; 10 miles E.N.E. of Chrudim.

UBERTI, Fazio, (Bonifacio,) De glia, in Geberography, an Italian poet, born at Florence, who flourished in the 14th century. His character is represented as amiable, allowing for his disposition to frequent the courts of tyrants and to pay adulation to the great; but his poverty in a state of exile, as one of the Ghibelline party, has been ascribed as an apology for his conduct. He wrote various poems, and according to the account given of him by Villani, he was the first who employed with effect that species of poetical composition called by the vulgar 'trattelle,' or ballads. His principal work, however, written in his advanced age, was a description of the world in verse, entitled 'Ditta Mondo.' This is divided into six books, but was left in an unfinishing state, though written at different periods from the year 1355 to 1364. It was first printed at Verona, and afterwards at Venice in 1501. He is reckoned superior to the Italian poets of his time in energy of style. Some of his Canzone have been published in collections. He died and was interred at Verona.

UBES, St., in Geography. (See Setuval.) This town would be more considerable if it were not so near to Lisbon, and the trade carried on through Lisbon houses; for here, it is said, there are only mercantile firms. Its trade consists in wine, of which various kinds are exported. Oranges are likewise exported: but the chief commercial article of St. Ubes is salt, which is taken principally by Danish and Swedish ships. The salt-pans lie in great numbers along the Sado or Sandoa, and its branches, being called in Portuguese 'marinas.' They are dug square, about three feet deep, and salt-water is introduced on one side from the sea, at flood, through canals which extend in innumerable branches, and are shut when the pans are full. The water is often previously collected in large resevoirs called 'governos,' from which it is afterwards distributed into the marinas, where being evaporated, the salt is collected in the month of June, and kept either in wooden sheds, or in heaps, which are protected from the rain by thatches. This salt is large-grained, becomes but little moist by the air, and excels in purity the marine salt collected in other provinces of the south of Europe, or in other parts of Portugal. The fisheries of St. Ubes were formerly celebrated, but have of late much declined.

Opposite to St. Ubes, on the narrow strip of land that forms the entrance of the harbour, are the remains of an ancient city, called Troya. Tradition reports that this place was buried in sand; and that the inhabitants removed and built St. Ubes on the opposite side.

UBI, or UBA, an island in the East Indian ocean, in the gulf of Siam, near the coast of Cambodia; about 21 miles in circumference, with plenty of wood and good water. N. lat. 8° 26'. E. long. 105° 56'.

UBIGAU, a town of Saxony; 6 miles N.W. of Liebenwerda. N. lat. 51° 34'. E. long. 12° 20'.

UBI, in Ancient Geography, a people whose first abode was on the other side of the Rhine, being separated from Gaul by the river. Being afterwards pressed by the Suevi, they had recourse to Caesar. Agrippa passed the Rhine, according to Dion Cassius, and transported them to the other bank of the river and established them, with a view to the security of the adjoining frontier of the empire. Under the reign of Claudius, an Agrippine colony was founded among them, and they voluntarily assumed the name of Agrippinenses, as their attachment to the Romans excited the envy of Civilians. Their territory extended along the Rhine, from the Treveri to the borders of the Gugerni, who had been a branch of the Menapii. The Ubians, on the right bank of the Rhine, were continually harassed by the Sicambri, and in order to avoid the hostility of such neighbours, they were induced to cross the river. Agrippa caused them to build a town, which was called 'Civilitas Ubiorum,' in which he planted a Roman colony, denominated 'Colonia Agrippina.' This town is the present Cologne. The Ubii formed a part of the Germanic body, which they abandoned in order to enter into a league with the Celtic people. This separation of the Ubians is referred to about the thirty-seventh year before our era. They worshipped the god Mars.

UBIQUITISTS, UBQUITARIES, or UBQUITARIANS, formed from ubiique, every where, in Ecclesiatical History, a sect of Lutherans, which rose and spread itself in Germany, and whose distinguishing doctrine was, that the body of Jesus Christ is every where, or in every place.

Brentius, one of the earliest reformers, is said to have first broached this error, in 1560. Luther himself, in his controversy with Zuinglius, had thrown out some unguarded expressions, that seemed to imply a belief of the omnipresence of the body of Christ; but he became sensible afterwards, that this opinion was attended with great difficulties, and particularly that it ought not to be made use of as a proof of Christ's corporal presence in the eucharist. (Luther, Oper. tom. viii. p. 375. ed. Jenenf.) However, after the death of Luther, this absurd hypothesis was renewed, and dressed up, in a specious and plausible form, by Brentius, Chemnitz, and Andraes, who maintained the communication of the properties of Christ's divinity to his human nature.

Melanthon declared against it; maintaining that it introduced, with the Eutychians, a kind of confusion into the two natures of Jesus Christ; and protestted, that he would oppose it as long as he lived.

On the other hand, Andraes, Flacius Illyricus, Schmidelein, Oifander, &c. espoused Brentius's party; and asserted the body of Jesus Christ to be every where.

The universities of Leipsic and Wurtemberg, and the generality of Protestants, felt themselves against this new heresy, but in vain: the Ubiquitarians grew stronger and stronger. Six of their leaders, Andraes, Schneecer, Muffel, Chemnitz, Chytreaus, and Cornerus, having a meeting in 1576, in the monastery of Berg, they there com-
pofed a kind of crede, or formula of faith, called the "Form of Concord;" wherein the ubi-quitity was established as an article. See Form of Concord.

Muculus, one of these leaders, and the most zealous advocate of the ubiquity, expressly maintains, that the ascen-
dedion of Christ into heaven was nothing more than a ceafing to be visible, and that it is not performed by any physical
motion, or change of place: and in 1552 he published a book to prove that it is by no means necessary, that the
glorious body of Christ should physically fill up any space.

And he declares in a fermo in 1564, that they who teach
that Jesus Christ died only as to his human nature, belong
to the devil, both body and foul; and that the true doctrine
is, that he died as to his human and divine nature.

All the Ubiquists, however, are not agreed: some of
them, and among the rest the Sweden, hold that Jesus Christ,
even during his mortal life, was every where: others main-
tain, that it is only since his ascension that his body is every
where.

G. Hornius only allows Brentius the honour of being the
first propagator of ubiquitism; its first inventor, accord-
ting to him, was John of Wetphalia, or Wellephalus, a minister
of Hamburg, in 1552.

But according to Hopeffian, Wetphalus opposed the
opinion concerning the ubiquity advanced by Brentius and

UBIQUITY, in the University of Paris, is a term applied
to fuch doctors in theology, as are not restrained to any
particular houfe; either to that of Navarre, or Sorbonne.

The Ubiquists are called, simply, doctors in theology;
whereas the others add, of the houfe of Sorbonne, or Navarre,
&c. See Sorbonne.

UBIQUITY, Omnipresence; an attribute of the God-
head, whereby he is always intimately prefent to all things;
gives the effe to all things; and knows, prefers, and does
all in all things.

For since God cannot be faid to exift in all places, as
placed therein, (beauf, then, he would need something to
his effe, viz. place; and would have extension, parts, &c.) he muft be conceived to be every where, or
in all things, as a firit, univerfal, efficient caufe, in all his

effects.

He is prefent, therefore, to all his creatures, as a pure
act, or an exercife of an active virtue, which knows, pref-
ferves, governs, &c. every thing. Nor are even finite minds
prefent otherwise than by operation. See God.

UBIRRE, in Ichthyology, a name given by fome to the
anguilla marina, or small sea-eel.

UBIUM, in Botany, altered by Rumphius, Herb.
Amboin. book 9. 346, from the Malay name Ubi, a synonym
of fome fpecies of Dioscorea; see that article. Forster
defires all the kinds of Ubium, mentioned by Rumphius,
to belong to D. alata. These differ chiefly in the fhape of
the roots, and in the items being furnished or not with flefhly
buds, or bulbs, of different forms. These roots confitute
one of the moft important articles of food, in the remote
islands of India and the South Seas.

UBNI, in Geography, a town of Wolachia; 10 miles N.
of Viddin.

UBOA, a town on the west coaft of the ifland of Lucon.
N. lat. 16° 57'. E. long. 120° 48'.

UBRAYE, a town of France, in the department of the
Lower Alps; 9 miles N.E. of Caffelane.

UBRILEN, a town of the Arabian Irak; 5 miles S.E.
of Baffora.

UBRIX, in Ancient Geography, a town of Africa, on the
coast of Libya. Ptolemy.

UC, a town of Afn, in the interior of Media. Pto-
lemy.

UCCANO, in Geography, a town of Portugal, in the
province of Beira; 2 miles N. of Lamego.

UCAYALE, UCALAL, or UCAYALE, a river of South
America, formed by the union of the Apurimac and Ene,
in S. lat. 10° 50'. It purfues a northerly courfe to S.
lat. 4° 15', where it joins the Maranon, near St. Joachim
de Omaguis, and then takes the name of the Amazons.

See MARAXON.

UCENA, in Ancient Geography, a town of Afn, in Ga-
latia, belonging to the Trochimi. Ptolemy.

UCENI, a people placed by the inscription on the trophy
of the Alps, mentioned by Pliny, near the Medulli and the
Caturiges, and fpofded by Saxon to be the fame with the
Sicomin or Iconii, mentioned by Strabo.

UCETIA, a town of Gallia Narbonnenfis.—Alfo, a
town of Gallia Transpadana. Strabo.

UCHALIGES, a people of Africa, in Libya Interior.

UCHENDEGE, in Geography, a town of the principality
of Georgia, and chief place of a diocfe, situated to the eft
of Telies. In 1395, this town was taken by Timur Bec,
and the whole garrifon put to the sword.

UCHINCHIR, one of the small Kurile iflands, in the
North Pacific ocean. N. lat. 48° 30'. E. long. 155° 44'.

UCHKILISSA, a town of Perfhon Armenia; 18 miles N.W. of Erivan.

UCHT, a river of Brandenburg, which runs into the
Aland, near Olferburg.

UCHTLHAIUSEN, a town of the duchy of Wurz-
burg; 6 miles E. of Schweinfurt.

UCIBI, in Ancient Geography, a town of Africa Pro-
pria, in Numidia Nova. Ptolemy.

UCIMATH, a town of Africa, in Libya Interior,
upon the northern bank of the river Gir. Ptolemy.

UCKER, in Geography, a river of Pomerania, which
empties itself into the Fribe-Haff, 1 mile N. of Ucker-
munde.

UCKER Mark. See BRANDENBURG.

UCKER See, a confiderable lake of Brandenburg, in the
UCKER Mark, fitated to the fouth of Premzlow.

UCKERMUNDE, a town of Anterior Pomerania, fitated
on the river Ucker, near its entrance into the Fribe-Haff.
This town was furrounded with walls in 1190. In the 17th century it fuffered greatly by fieses,
and the vicifitudes of war; and in 1713, was facked by
the Russifis. It has good fisheries, pastures, and woods;
29 miles N.N.W. of Old Stettin. N. lat. 53° 48'. E. long.
13° 57'.

UCKEWALLISTS, in Ezekifical History, a fect of
rigid Anabaptifts, fo called after its founder Uke Wallis, a
native of Frieland. This fectary not only exhorted his
 followers to maintain the primitive and auftere doctrine of
Menno, but took it into his head to propagate, in connec-
tion with one John Leus, in 1637, a fingular opinion con-
cerning the falvation of Judas, and the ref of Chriff's
murderers; alleging, that the period of time, which ex-
 tended from the birth of Chriff to the defcent of the Holy
Gholf, and was, as it were, the diflinfive term that fepa-
rated the Jewifh from the Christian dispensation, was a time
of profound ignorance, during which the Jews were delti-
tute both of light and divine succour; and that, confi-
ently,
quently, the sins and enormities, that were committed during this interval, were in a great measure excusable, and could not merit the severest displays of the divine justice. This pale fiction met with no indulgence either from the Mennonites, who excluded its inventor from their communion, or from the magistrates of Groningen, who banished him from the city. In Earls Frieland he drew after him a considerable number of disciples, whose descendents still subsist in the neighbourhood of Groningen, Frieland, and also in Lithuania and Prussia, and have their own religious assemblies, separate from those of the other Mennonites. They re-baptize all who leave other Christian churches to embrace their communion; they studiously avoid every appearance of elegance or ornament; suffering their beards to grow to an uncommon length, and their hair to lie uncombed over their shoulders; their countenances are marked with melancholy; and their houses only adapted to answer the demands of necessity. Their inspectors or bishops, whom they distinguish from the ministers whose office is to teach, are chosen by an assembly composed of all the congregations of the sect. The ceremony of washing the feet of strangers is considered by them as a rite of divine institution. They carefully avoid even the aspect of learning and science, and thus prevent all attempts to alter or modify their religious discipline. Molhem's Eccl. Hist. vol. v. 8vo.

UCLES, in Geography, a town of Spain, in New Castile. In 1108, a battle was fought near this place between the Christians and the Moors, in which the former were defeated with great loss; 20 miles S.W. of Huete.

UCO, a town of Chili; 9 miles E.S.E. of St. Yago.

UCRIA, a town of Sicily, in the valley of Demona; 8 miles W.S.W. of Pati.


Gen. Ch. Cal. Perianth superior, of one leaf, short, cup-shaped, with five angles, and five small, erect, acute teeth, permanent. Cor. of one petal, tubular; tube extremely long and slender, cylindrical, pervious; limb bell-shaped, with five rather short, ovate, acute, equal, slightly spreading, marginal segments. Stam. Filaments five, very short, inserted into the limb between the segments; anthers incumbent, oblong, pointed, of two cells. Pila. Germen inferior, elliptical; style the length of the tube of the corolla, thread-shaped; swelling and hairy at the top; stigma of two rounded lobes. Peric. Berry elliptical, fleshy, of two cells, crowned by the permanent calyx. Seeds: numerous, roundish, inserted into the middle of the partition at each side, and surrounded with viscid pulp.


1. U. scirpoidea. Willd. n. 1. (Tocoyena longifiora; Aenl. t. 50.)—Native of woods in Guiana, bearing flowers as well as fruit in August. Stem shotty, simple, about three feet high, obtusely quadrangular, leafy. Leaves opposite, stalked, fifteen inches long, lanceolate, acute, entire, smooth, contracted at the base, with one rib and many transverse veins. Stipular in pairs, intrafollicaeous, ovate. Flowers about fourteen, crowded at the top of the stem, sessile, opposite, erect, very fragrant, white, with a yellow tube, nine inches and a half long, the thickness of a goose-quill. Calyx very small. Berry yellow, an inch in length.

This plant comes very near to Gardenia, or at least to Thunberg's Rothmannia. (See Gardenia.) We do not profess to have had sufficient opportunities of comparing them and their allies, to form an accurate judgment. Willdenow has changed the specific name without any authority or reason.

UCUBIS, in Ancient Geography, a town of Spain, in Bética.

UDA, in Geography, a river of Russia, which runs into the Velika, 12 miles N.W. of Onega, in the government of Piskov.—Also, a river of Russia, which joins the Tchiuna, N. lat. 55° 50'. E. long. 99° 22'.—Also, a river of Ruflia, which runs into the Selenga, near Verch Udiuk.—Also, a river of Russia, which runs into the sea of Ochotz, N. lat. 55° 15'. E. long. 136° 44'.

UDACENSES, in Ancient Geography, mountains of Asia, in Corduena, south of the lake Ar thìa, lat. 37° 30'.

UDAL. See Odial.

UDASSA, in Geography, a town of Hindoostan, in Goondwana; 12 miles N.W. of Nagpaur.

UDWANTANAGUK, a town of Hindooftan, in Bahar; 5 miles S.S.W. of Arrah.

UDDALAKA, in Hindoo Mythology, is the name sometimes given to a theologian, who is said to be the son of Aruna, the charioteer of the sun. He is not often read of. Respecting his parent, who corresponds with the Aurora of western fables, notice will be found under our article Surya, the common name of the Hindoo Phobus.

In the theogonies of the Puranas (see Purana), when describing the procees of churning the ocean, as mentioned in our article Kurmayata, a goddess, named Jyeftha, was produced. She is deemed the goddess of poverty and misfortune, and having rove from the sea earlier than Lakshmi, the goddes of riches and fortune, is called her elder sister. Vishnu, enamoured of the latter, wished to espouse her; but the objected, saying her elder sister, agreeably to the injunctions of the Veda, ought to be married first. And this we may remark, in paling, is a rule in force at this day, though not invariably observed. Vishnu, after much difficulty, prevailed on Uddalaka the Rishi, who was unmarried, to take the undeferrable damsel to wife; and Sagara, her father, sealed the nuptial ceremony by pouring water into the hands of the Rishi. (See Sagara.) Jyeftha, like Lakshmi, is called the daughter of the ocean, and is celebrated as being ever faithful to her comfort. She is sometimes called Sretha.

Under the article Rishi will be found an account of the holy men so designated. One of them taking the goddef of poverty to wife, means, we may suppose, the usual profession of poverty by pious perfons. It was no small sacrifice of comfort to be linked to such a rib: for Jyeftha is described to have arisen in black garments, with yellow hair, red eyes, wanting many teeth, those remaining of repelling appearance, her tongue lolling out of her mouth, potbellied, &c. &c.; so that gods and demons were amazed at the sight of such a figure. Such a one is described, from an image in the East India Houfe, in our article Kal. Her younger sister, on the contrary, is described as superlatively fascinating, but fickle; being a personification of Fortune.

UDDEN, in Geography, a town of Arabia, in the province of Yemen; 44 miles E.S.E. of Zebid. N. lat. 13° 58'. E. long. 43° 50'.
UDDER, in Rural Economy, a term applied to the glandular organ, which is defined for the preparation and secretion of the milk in cows, mares, ewes, fows, or any other kinds of domestic animals, and which is often much subject to disease.

It is to be noticed, that the udders of young cows which are in a high condition, are sometimes very greatly swollen and inflamed for several days before they calve; in which cases, it is mostly proper to milk them frequently in repetition, and alternately to anoint the distended parts, with some severe inunction, with a faturine cooling ointment, and brandy, or some other quickly evaporating spirit; as, by such means, these swellings are often speedily removed, without much danger or inconvenience. But, besides these sorts of swellings, the udders of cows are liable to injures, which are often of a more serious consequnce, as from falls, blows, the wounds of sharp instruments, or such as are pointed, and the violent sucking of calves, as well as from the injudicious or rough treatment of harsh and inexperienced milkers. In such cases, while the inflammation in the glands remains in a hard and indolent state, the parts so affected should be repeatedly anointed in the course of the day with some gentle cooling sub stance, such as fresh lard, or with a solution consisting of one ounce of Calamine soap, dissolved in a pint and a half of new milk, over a moderate fire, constantly stirring it until it becomes thoroughly mixed and incorporated. An ointment, too, prepared from the juice of the leaves of the common thorn-apple, by mixing it with fresh hog's-lard, is said by fome to be an excellent application in cases of this nature. Such tumours may likewise, in many inclusions, be anointed with a little of a composition, consisting of camphor dissolved in spirit and blue ointment, with great benefit; and about half a dram of calendul may be given in a boaln of treacle and warm beer, three or four mornings together, if the swelling should continue to increase. Where, however, the udder and teats are considerably inflamed and swelled, other internal remedies may be had recourse to; for which purpose, it has been recommended to mix four ounces of nitre with one pound of common salt, and to give two tablespoonfuls of the powder in a gallon of thin water-gruel every three hours. But in cases the affection, in such instances, should have made, from neglect, such progress as to display large hardish tumours in the parts, fomentations of the fort given below may often be applied with advantage. Boil in a sufficient quantity of water one handful of the leaves of common hemlock, the fame quantity of the dwarf or round-leaved mallow, and an equal proportion of common melilot, and diligently apply the liquid, by means of cloths wrung out of it, to the part or parts, as warm as the breast can bear it. As soon as the tumour or tumours, in this case, burst or opens, the wound should be well and properly cleaned, and then covered with a pledge of lint, and a plaster of common cerate or basilicon laid over all.

The remedy directed below, it is said, has been employed with great success in very obstinate cases of ulcerated cattle udders: one ounce of gum ammoniacum, the fame quantities each of gum galbanum, Calamine soap, and extract of hemlock; reduce the gums into powder, and form them with the soap and extract into eight small balls, one of which is to be given to the beast every night and morning. In cases where the teats only are fore, they may first be washed well with clean warm soap-fuds, and then rubbed with an ointment, composed of finely powdered ceruse or white lead, which has previously been saturated with brandy, and well mixed and united with a proper quantity of elder ointment or grose-grease.

In the case of sheep too, these parts are often much affected, when the lambs are yeaned in the ewes, the lactiferous ducts in the udders of which are liable to become attacked with various obstructions, which are the consequence of hard tumours or swellings being formed, which are accompanied with inflammation, and which, if not speedily relieved, will terminate in mortification, not unfrequently in the course of twenty-four hours. As soon as such swellings or tumours are discovered, the wool should be torn off closely in a careful manner, and the part affected be frequently wetted and rubbed well with camphorated spirit of wine. If, however, suppuration should ensue, the part should be laid open by a strong lancet or sharp knife, and the matter be discharged, when a pledge of lint should be laid over the part, and secured by a plaster spreaded with some soft ointment, or the common cerate rubbed with a little oil. Ewes, when thus affected, should be kept separate from the rest of the flock, and though one of the nipples may be lost, they may be allowed to suckle their lambs; but in cases where both are affected, there is, of course, no alternative but that of fattening them off for sale, and to bring up their lambs by hand in the best manner possible.

The udders and nipples of ewes are likewise very apt to be heated, chafed, and fretted, by which the lambs are prevented from being let suck in a proper and ready manner; consequently, in all such cases, the parts so affected should be kept as cool as possible, and be well washed with a weak solution of white vitriol in rain-water, or be anointed with some mild softening ointment, such as that of elder, or common cerate softened with oil, once or twice in the day; care being taken to have them well removed by the use of warm water and a little soft soap, before the lambs be again admitted to them for suckling.

The diseases of the udders, in the other sorts of domestic animals, are, for the most part, to be treated in a similar manner, according as the nature of them may be; always having the parts carefully cleaned, before the young are suckled.

UDDER-LOCKING, a term used in the management of sheep, to signify the practice of clearing away the locks of wool from about the udders, and other parts, where the lambs suck, in ewes. Some sheep-farmers have a very high opinion of the necessity and utility of this custom, while others as strongly condemn it, and consider it to be quite unnecessary, as well as dangerous and hurtful both to the ewes and the lambs. It may, however, be useful in different cases and circumstances. The former, or those in favour of the practice, recommend that, immediately before the ewes begin to drop their lambs, they should be carefully driven into the yards, folds, or pens, and have a small part of the locky wool pulled off from about their udders, in order to give the lambs more easy and ready access to the teats or nipples, by which they come forward faster, and succeed better. But the latter, or those who object to the custom, think that they have seen instances where it occasioned not only the death of nearly one-twentieth part of the ewes, but that many of those which survived it lambed dead lambs at the danger and hazard of their own lives. They suppose that there is naturally a sufficient space left bare about these parts, so as to enable the young lambs to find the ducts or nipples; and that the uncovering more, or a larger extent of parts, serves only to starve and expose the ewes in the most tender and delicate parts; as, although they have been engaged among sheep the whole of their lives, they have never seen a single lamb die from the want of its dam or mother being udder-locked, even though the
may have been ever fo young, or ever fo rough in such parts: nor have they ever met with any persons who could be certain that they had seen any. How far some breeds of sheep, as those of the Cheviot, may have their lambs more readily or more easily killed or destroyed in this way, or whether it may not be owing to the shape of the udders in their dams, which being more full and exposed in such parts, is not by any means well known; but far less injury or exposure, in this or in any other way, will make that breed of sheep lamb dead lambs, it is said, than in the forest, or probably some other breeds.

But though this practice may often be found prejudicial in the more northern parts of the kingdom, in the southern sheep districts it may not unfrequently be had recourse to with very considerable utility and advantage in different respects.

**UDIVALLA**, in *Geography*, a sea-port town of Sweden, in the province of Bohus, with a strong fort and convenient harbour. The inhabitants carry on a considerable trade in iron, planks, and herrings; their number is about 9000; 205 miles W.S.W. of Stockholm. N. lat. 58° 21'. E. long. 11° 45'.

**UDEBODE**, a town of the island of Ceylon; 60 miles S. of Candi.

**UDEGHUR**, a town of Hindoostan, in the Carnatic; 43 miles N.W. of Nellore. N. lat. 14° 43'. E. long. 79° 16'.

**UDEM**, a town of France, in the department of the Roer; 7 miles S.S.E. of Cleves.

**UDEPIRCONDA**, a town of Hindoostan, in Myfore; 20 miles N.W. of Anantpour.

**UDEWANGEN**, a town of Prussia, in Natacen; 12 miles S.S.E. of Konigberg.

**UDI**, a town of Egypt; 10 miles N. of Attieb.

**UDJARMA**, a town of the principality of Georgia, in the province of Kakhet; 24 miles E. of Tiflis.

**UDICA** denotes the projecting part of a barges stern, on which its name, &c. is printed.

**UDINA**, or **UDINE**, in *Geography*, a town of Italy, and capital of Friuli; to which, on the decline of Acquileia, the patriarch removed his seat. It has several churches, convents, and hospita!s, a college for the study of law, and a military academy: and it is said to contain between 17,000 and 18,000 inhabitants; 35 miles N.W. of Triele. N. lat. 46° 10'. E. long. 13° 14'.

**UDINE, Giovanni da**, in *Biography*, was the cognomen of an affidavit of Raphaelle in the works of the Vatican, whose real name was Nanni. His family resided at Udine, where he was born in 1494, and had there followed the occupation of embroiderers with so much excellence, as at length almost to have lost their own name in that of Ricamatori, by which Vaffari often calls him. His father, become rich, amused himself with hunting; and his son Giovanni found his sport, at a very early period of his life, in drawing the animals, birds, &c. brought him from the chase. This indication of taste for painting was encouraged, and the youth was placed under the tuition of Giorgione, at Venice, with whom he acquired a knowledge of colour and chiaro-scuro. About the time of the death of Giorgione he went to Rome, and being furnished by his protector, the patriarch Grimani, with letters to count Baldassare Cafliglione, he was introduced to Raphaelle, who admitted him into his school, and employed him in painting the grotesque and ornamental accessories of his larger works. The imagination of his master Raphaelle, and of himself, was led to the introduction of this species of ornament, by the discovery of the painted chambers in the baths of Titus, then recently opened, when Giovanni was employed in making designs of the beautiful ornaments in tusco found there, and thence denominated * grotesque*. In pursuance of these studies, he discovered the composition of the tusco upon or rather in which they were painted; and with the fame materials, he, by order of Raphaelle, prepared the walls and ceilings of the Loggie, and painted upon it the beautiful series of ornamental combinations of flowers, fruit, animals, vases, &c. since then so much employed in adorning the dwellings of the rich and great. This part of the work was entirely entrusted to Giovanni da Udine, under whose directions a number of ingenious young men were employed; and the taste and ability, the freedom and truth, without minuteness, with which the whole is managed, has ever since been a constant subject of praise and admiration. After the death of Raphaelle, he was employed by Clement VII., in conjunction with Pierino del Vaga, to ornament that part of the Vatican called the Torre di Borgia. When he was compelled to leave Rome by the faking of that city, he was employed for a time at his native place, and afterwards was engaged at Florence in adorning the palace of the Medici; and returning to Rome in the pontificate of Pius IV., left in various places there mementos of his admirable ingenuity. He died there, at the age of seventy, in 1564, and had the honour to be buried in the church of La Rotonda, (the Pantheon,) near the tomb of his renowned master.

**UDINE, Martino da**, called Pelegrino di San Danielo, was born at the castle of San Danielo, near Udine, about the year 1480, and was a disciple of Giovanni Bellini. He purveyed the style of that master in the many religious subjects he treated for altar-pieces at Udine and his native place, where his works are principally to be found; though it is said, in addition to his fame, that something of Giorgione's breadth may be discovered in his latter productions. He died about 1545.

**UDINSK, Niznii**, in *Geography*, a town of Ruffia, in the government of Irkutsk, situated on the river Uda; 260 miles N.W. of Irkutsk. N. lat. 54° 15'. E. long. 98° 50'.

**UDINSK, Verehuchi**, a town of Ruffia, in the government of Irkutsk, on the Selenga; 88 miles E. of Irkutsk. N. lat. 51° 50'. E. long. 105° 20'.

**UDINSKA**, a town of Ruffia, in the government of Irkutsk, at the conflux of the Uda and the Angara; 140 miles W.N.W. of Irkutsk. N. lat. 54° 12'. E. long. 103° 14'.

**UDINSKA, Nov.,** a town of Ruffia, in the government of Irkutsk, on the Uda; 24 miles S.E. of Udinska.

**UDITTA,** in *Ancient Geography*, a town of Africa Propria, between the Two Syrites. Polemy.

**UDNON,** in *Botany*, the name by which Theophrastus and Dioscorides have called the truffle commonly used at table in their times: but we find that they were not acquainted with a better kind of truffle, which we cultivate at present.

This smooth reddish-coated truffle is common in Italy at this time, and is esteemed of no value, and called the wild truffle; the fort that is eaten there, and in all other parts of Europe, is the blackish and rough-coated kind. In Africa they have a yet finer kind than our's: it has a white coat, and is of the most delicious flavour. The Greeks were also acquainted with this, and denominated it Cyprian, as they did almost all the things they had from Africa: they also gave it the name *mush.*

**UDO,** in the *Materia Medica*, a name given by the Portuguese to the lignum aobis.

It seems only a corruption of the monosyllable *ud,* by which
which the Arabian physicians have called that drug; and even this ad posibly was only a contraction of the orthography of the word herb; which seems to have been the original name of this drug among the Arabs.

UDON, in Geography, a town of Japan, in the island of Niphon; 60 miles W. N. W. of Jedo.—Also, a town of Japan, in the island of Ximo. N. lat. 32° 30'. E. long. 123° 30'.

UDORIGILL HEAD, in Geography, a river of Aegadian Sarmatia; the mouth of which, according to Ptolemy, was in the Caspian sea, between that of Alontas and that of Rha.

UDSOKI, a town of Japan, in the island of Niphon; 15 miles S. W. of Meaco.

UDSTEIN, a small island near the coast of Norway; 9 miles N. W. of Stavanger.

UDUAR, a town of the island of Ceylon; 26 miles S. S. E. of Columbo.

UDVARHELY, a town of Transylvania; 22 miles N. E. of Scheiburg. N. lat. 46° 30'. E. long. 24° 54'.

UDUMNAEVSKOI, a fort of Russia, in the government of Irkutsk; 88 miles S. W. of Nertchinsk.

UDURA, in Ancient Geography, a town of Hippania Citerior, belonging to the Taccetani. Ptolemy.

VEA, in Geography, a town of Peru, in the province of Segedion; 52 miles N. of Zaragoza.

VEADAR, in Chronology, the thirteenth month of the Jewish ecclesiastical year, answering commonly to our March; this month was intercalated, to prevent the beginning of Nisan from being removed to the end of February.

VEAGUES, in Geography, a town of France, in the department of the Cher; 6 miles S. W. of Sancerre.

VEAL TOWN, a town of New Jersey; 14 miles N. N. W. of New Brunswick.

VEAS, a town of Spain, in the province of Seville, on the Odiar; 8 miles N. N. E. of Gibraleon.

VEASCION, in Ancient Geography, a town of Italy, allied to the Romans; it was attacked by the Gauls on their departure from Rome, but they were surprized and routed by Camillus. Plutarch says, that the Gauls, on leaving Rome, encamped eight miles from this town in Latium.

VEBRON, in Geography, a town of France, in the department of the Lozere; 6 miles S. of Florac.

VECCHI, Orazio, in Biography, born at Milan, and many years master di capella at Mantua, gained great reputation, not only as an able musician, but a poet. His numerous canzonets for three and four voices, published at Milan and Venice, from 1580 to 1613, were reprinted and sung all over Europe. Our countryman, Peacham, who had received instructions in music from this composer, during his residence in Italy, speaks of him in the following manner: "I bring you now mine own master, Horatio Vecchi, of Modena, who, beside goodnes of voice, was most pleasing of all other for his conceit and variety, wheresoever his works are singularly beautified, as well his madrigals of five and six parts, as thole his canzonets, printed at Norimberge."

(Complete Gentleman, p. 102.) He then infinaces and points out the beauties of several of his compositions, that were most in favour during that time. Besides secular music, Vecchi composed two books of faced fongs, in five, six, seven, and eight parts; masses of six and eight voices; and four-part lamentations.

Vecchi has been erroneously suppos'd by many of his countrymen the inventor of the burletta or comic opera in Italy; and it was the opinion of the learned Muratori (La Perfetta Poetica, lib. iii. cap. 4.), that a musical drama or farce, called Aniparnasia, written and set by the celebrated Orazio Vecchi, and acted and printed at Venice, 1597, was the origin of the OPERA BUFFA; which see.

VECCHIA, Pietro, born at Venice in 1605, was a painter, educated in the school of Paduanino, but more an imitator of Giorgione and Pordenone; and some of his pictures have been mistaken for works of those masters. Sandrart relates a story of his having been deceived by a picture of Vecchia, which he mistook for one by Giorgione. From this talent of imitating others, the doge and senate of Venice employed him to copy the ancient works in mosaics which are preferred in the church of St. Marc. And in that church are also two original and very able pictures by him, representing the Crucifixion, and Chirli driving the money-changers from the temple. His colouring is rich and warm, and his execution free and full, but sometimes apt to be incorrect. He died in 1678, aged seventy-three.

VECCELLI, Titiano. See Titiano.

VECCELLI, Orazio, son of Titian, born at Venice in 1540, practised the art of painting under his father's tuition, but became distinguished only as a painter of portraits, some of which were esteemed as little inferior to those of his father. He died in the same year with his father, 1576.

VECELLI, Marco, called Marco da Tiziano, was the nephew and disciple of Titian, and born at Venice in 1545. He appears to have been regarded by his great instructor with peculiar favour, and certainly his talent gave him the fairest claim to such distinction; for he approached the nearest to Titian, both in colour and composition, of all his discipiles, and has left several original works, very defervedly esteemed, in the Palazzo di San Marco. He also executed several considerable works for the churches in Venice, Trevisi, and in the Fruli. He died in 1611, leaving a son, known by the name of II Tizianello, who obtained much repute by his paintings, but they are in a loose and mannered style: his bell productions are his portraits.

VECHT, in Geography, a river which rises in the bosphoric of Munster, about six miles N. E. of Coesfeld, crosses Bentheim and Overfifel, and runs into the Zuyder See at Gelmuyden.—Also, a river which passes by Utrecht, and runs into the Zuyder See at Muyden.

VECHTA, a town and fortress of Germany, in the bosphoric of Munster; 60 miles N. E. of Munster. N. lat. 52° 43'. E. long. 8° 18'.

VECS, a town of Transylvania; 16 miles E. S. E. of Biltritz.

VECTIS, in Ancient Geography, an island of the British ocean, S. of the Portus Magnus, or Great Haven, according to Ptolemy and Pliny.

VECTIS, in Mechanics, one of the powers, more usually called the lever; which see.

VEXTOR, Heterodromus. See HETERODROMUS.

VECTOR, in Astronomy, a line supposed to be drawn from any planet moving round a centre, or the focus of an ellipsis, to that centre or focus.

This, by some writers of the new astronomy, is called vector, or radius vector, because it is that line by which the planet
planet seems to be carried round its centre; and with which it describes areas proportional to the times.

VEDA, the name by which the Hindoos designate the collective body of their scripture. They enumerate eighteen parts of true knowledge, as follow: four Vedas, four Upavedas, six Angas, and four Upangas. The prefixture up infers a work deduced from its principal; like our sub, implying inferiority.

The first four, according to a native writer, quoted by Sir W. Jones, are the immortal Vedas, evidently revealed by God, which are entitled, in one compound word, Rig-yajya-samanyaarthavara; or, in separate words, Rig, Yajya, Saman, and Atharvan. The Rigveda consists of five fecciones; the Yajurveda, of eighty-six; the Samaveda, of a thousand; and the Atharvaveda, of nine; with eleven hundred sūtras, or branches, in various divisions and sub-divisions. The Vedas in truth are infinite; but were reduced by Vyāsa to this number and order. The principal part of them is that which explains the duties of man in a methodical arrangement; and in the fourth is a yṣṭham of divine ordinances.

From these are deduced the four Upavedas; viz. Ayūth, Gandharva, Danuth, and Sthapatya. The first of which was delivered to mankind by Brahma, Indra, Dhanwantari, and five other deities; and comprises the theory of divinities and medicines, with the practical methods of curing diseases. The second, on music, was invented and explained by Bharata; it is chiefly useful in raising the mind by devotion to the divinity of the cubic nature. The third Upaveda was composed by Vishwamitra, on the fabrication and use of arms, and implements handled in war by the tribe of Khatriya. Vishvakarma revealed the fourth, in various treatises on forty-four mechanical arts, for the improvement of such as exercise them. Of the personages named above, viz. Brahma, Indra, Vishvakarma, Vishwamitra, and Vyāsa, are under those words respectively. Of Dhanwantari, some mention is made under our article Kurmanatha.

The six Angas, or bodies of learning, are also, according to the fame native authority, derived from the same source. We omit their names and contents; their subjects chiefly are: 1. Of the pronunciation of vocal sounds. 2. Detail of religious arts and ceremonies. 3. Grammar. 4. Prophesy. 5. Astronomy. 6. On the significature of difficult words and phrases in the Vedas.

Lastly, continues the same author, there are four Upangas, called Purana, Nyaya, Mimana, and Dharma. (See Purana, Nyaya, and Mimansa.) Eighteen Puranas were composed by Vyāsa, for the instruction and entertainment of mankind in general. Nyaya is a collection of treatises in two parts, on metaphysics, logic, philosophy, &c. Mimana is similarly divided into two parts; the latter, abounding in questions on the divine nature, and other sublime speculations, was composed by Vyāsa in four chapters and sixteen fecciones. It may be considered as the spring of all the Angas; it expounds the heretical opinions of sophists; and, in a manner suited to the comprehension of adepts, it treats on the true nature of Ganea, Bhāskara or the sun, Nilakantha, Lakṣmī, and other forms of One Divine Being. Of Ganea, the god of prudence and sagacity, see under Pollear. Bhāskara is a name of Surya. Nilakantha is a name of Siva, the fame as Shitakouta. Lakṣmī is the comfort of Viṣṇu.

The body of law, called Smriti, consists of eighteen books, &c. delivered for the instruction of the human species by Men, and other sacred personages. As to ethics, the Vedas contain all that relates to the duties of kings, the Puranas, what belong to the relation of husband and wife; and the duties of friendship and society (which complete the triple division) are taught fancifully in both. This double division of Angas and Upangas may be considered as denoting the double benefit arising from them in theory and practice.

To the above native account of the Vedas, Sir W. Jones adds an ingenious commentary. He says that the Vedas consist of three kandas, or general heads; viz. Karma, Jnyana, and Upațana; or works, faith, and worship. To the first of which, the author of the Vidyadeva, or View of Learning, a rare Sanscrit book, wisely gives the preference; as Menu himself prefers universal benevolence to the ceremonies of religion.

After all, continues this instructive writer, the books on divine knowledge, called Veda, or what is known, and Śrutī, or what has been heard from revelation, are still supposed to be very numerous; and the four here mentioned are thought to have been selected as containing all the information necessary for man. It must not be omitted, that the commentaries on the Hindu scriptures, among which that of Vafiṣṭha (see Vasiṣṭha) seems to be reputed the most excellent, are innumerable.

From the Vedas are immediately deduced the practical arts of chirurgery and medicine, music and dancing; architecture, which comprises the whole art of war; and architecture, under which the system of mechanical arts is introduced.

Next in order to these are the fix Vedangas: three of which belong to grammar; one relates to religious ceremonies; a fifth, to the whole compass of mathematics; and the sixth, to the explanation of obscure words or phrases in the Vedas. Subordinate to these Angas, though the reason of the arrangement is not obvious, are the series of sacred poems (see Purana), the body of law, and the fix philosophical fātras or shaftas. See Philosophy of the Hindoos, and Silastah.

In the commentary whence we quote parts of this article, Sir William Jones gives some of the reasons that induced him and Mr. Wilkins to believe, notwithstanding the mythological fable of Brahma’s four mouths, each of which uttered a Veda, that the fourth, or Atharva, was written or collected after the other three: but Mr. Colebrooke, in the eighth volume of the Asiatic Recherches, after noticing some texts and arguments on which that belief might be reasonably grounded, gives his own reasons and proofs in support of a contrary opinion. He thinks it probable that some portion at least of the Atharvāsa, is as ancient as the compilation of the three others; and its name, like theirs, is anterior to Vyāsa’s arrangement of them; but the fame, he adds, must be admitted of the portion called Itihaṣa and Purana, which constitute a fifth Veda, as the Atharvāsa does a fourth.

The Hindoos believe that the original Veda was revealed by Brahma, and to have been preferred by tradition until it was arranged in its present form by a sage, who thence obtained the name of Vyāsa, or the compiler; or Vedavyāsa, that is, compiler of the Vedas. He distributed the Indian scripture into four parts, as already enumerated; each bearing the common denomination of Veda.

With the Hindoos it is an article of their creed, that the Vedas were composed by no human author. It must be understood, therefore, that in affirming the primaeval existence of their scripture, they deny these works to be the original composition of the editor (Vyāsa), but believe them to have been gradually revealed to inspired writers.
VEDA.

It appeared to Mr. Colebrooke from several other passages, and from the received opinion of the Hindoos themselves, that the Rich, Yajush, and Saman, are the three principal portions of the Veda; and the Atharvana is commonly admitted as a fourth; and that divers mythological poems, entitled Itahafa and Purana, are reckoned a supplement to the scripture, and as such constitute a fifth Veda.

The Vedas are a compilation of prayers, called Mantra; with a collection of precepts and maxims, entitled Brahmana: from which last portion, that called Upanihad is extracted. The prayers are properly the Veda, and apparently preceded the Brahmana. Each Veda consists thus of two parts, the Mantras and the Brahmanas; or prayers and precepts. The complete collection of the hymns, prayers, and invocations belonging to one Veda, is called its Sanhita: every other portion of Indian scripture is included under the general head of divinity (Brahmana): this comprises precepts, which inculcate religious duties; maxims, which explain those precepts; and arguments, which relate to theology. But in the present arrangement of the Vedas, the portion which contains passages called Brahmana, includes many which are strictly prayers, or Mantras. The theology of the Indian scripture, comprehending the argumentative portion entitled Vedanta, is contained in the tracts denominated Upanihiad; some of which are portions of the Brahmana, properly so called: others are found only in a detached form; and one is a part of a Sanhita.

Prayers, employed at solemn rites, called Yajuya, have been placed in the three first Vedas: those in prose are named Yajush; such as are in metre are denominated Rich; and some which are intended to be chanted are called Saman; and those names, as distinguishing different portions of the Vedas, are anterior to their separation in Vyafa's compilation. But the Atharvana, not being used at the religious ceremonies above-mentioned, and containing prayers employed at oblations, at rites conciliating the deities, and as imprecations on enemies, is essentially different from the other Vedas. This is adduced by Mr. Colebrooke as the true reason why the three first Vedas are often mentioned without any notice of the fourth; which must be sought, he says, not in their different origin and antiquity, but in the difference of their use and purport. The fourth, or Atharvana, is known to contain many forms of imprecation for the destruction of enemies. These are called Mantra (see that article), but it must not be inferred that such is the chief subject of that Veda; for it contains also a great number of prayers for safety, and for the averting of calamities; and, like the other Vedas, numerous hymns to the gods, with prayers to be used at solemn rites and religious ceremonies, excepting, as above-mentioned, such as are named Yajuya.

Mr. Colebrooke gives a passage from that part of the second, distinguished by the title of the White Yajurveda, the other being called the Black, confirming his opinions as above indicated, and important, as containing an enumeration of the Vedas, and of the various sorts of paffages which they comprise:—

As smoke and various substancces separately issue from fire lighted with moist wood, so from this Great Being were reprieved the Rigveda, the Yajurveda, the Sama-veda, and the Atharva and Angiras; the Itahafa and Purana; the sciences and Upanihiads; the verbs and aphorisms; the expostions and illustrations: all these were breathed forth by Him.”

The commentators remark, that four sorts of prayers (Mantra), and eight kinds of precepts (Brahmana), are here stated. The fourth description of prayers comprehends such as were revealed to, or discovered by Atharvan and Angiras, meaning the Atharvana Veda. The Itahafa designate such passages, in the second part of the Vedas, as narrate a story. The Purana intends those which relate to the creation, and similar topics. “Sciences” are meant of religious worship; “verbs” are memorial lines; “aphorisms” are short sentences in a concise file; “expositions” interpret such sentences; and “illustrations” elucidate the meaning of the prayers.

The Puranas here meant are not the mythological poems bearing the same title; but, as already mentioned, certain paffages interperfed throughout that part of the Vedas called Brahmana, or divine precepts. This distinction is important. Under our article PURANA a pretty full account of those mythological romances will be found.

The subjets and uses of the prayers contained in the Vedas, differ more than the deities which are invoked, or the titles by which they are addressed: every line is replete with allusions to mythology, and to the Indian notions of the divine nature and of celestial spirits. For the numerous ceremonies to be performed by a householder, and full more for those endless rites enjoined to hermits and ascetics, a choice of prayers is offered in every stage of the celebration. It may be here sufficient to observe, that Indra, or the firmament, fire, the sun, the moon, water, air, the spirits, the atmosphere, and the earth, are the objects most frequently addressed; and the various and repeated sacrifices with fire, and the drinking of the milky juice of the moon-plant, or acid acleptias (see SOMALATA), furnish abundant occasion for numerous prayers adapted to the many stages of those religious rites.

In describing the Vedas so replete with mythological allusions, Mr. Colebrooke does not mean a mythology which avowedly extols deified heroes, as in the Puranas; but one which personifies the elements and planets; and which peoples heaven, and the world below, with various orders of beings. He observed, however, in many places, the groundwork of legends which are familiar in mythological poems; such, for example, as the demon Vritra, slain by Indra, who is thence furnished Vritravan (which fee), but he did not remark any thing, except some detached portions, the genuineness of which appeared doubtful, that correspond with the favourite legends of these feats which worship either the Linga or Sakti, or else Rama or Krishna. Such portions, he reasonably suspects have been compounded in more modern times, when compared with the other parts of the Vedas. This suspicion is chiefly grounded on the opinion, that the feats which now worship Rama and Krishna as incarnations of Vishnu, are comparatively new; he did not find in any other part of the Vedas the least trace of such a worship. The real doctrine of the whole Indian scripture is the Unity of the Deity, in whom the universe is comprehended; and the seeming polytheism which it exhibits, offer the elements, and stars, and planets as gods. The three principal manifestations of the Divinity, with other personified attributes and energies, and most of the other gods of Hindoo mythology, are indeed mentioned, or at least included, in the Vedas. But the worship of deified heroes is no part of that system; nor are the incarnations of deities figured in any other portion of the text which he had seen, though such are hinted at by the commentators.

On the point of unity in doctrine, inunvclated with great fulness and purity, we may refer to some translations from the Vedas by Mr. W. Jones, in the last volume of his Works.

After giving strong reason for believing the Vedas to be genuine compositions, in opposition to some allegations of their being forgeries, or grossly interpolated, Mr. Colebrooke avows his opinion, that the greater part of the books received by the learned among the Hindoos will affurdly be found genuine.
The idea of impurity arising from the chanting of the Samaveda, is not uniformly held. Mr. Colebrooke informs us, "that a peculiar degree of holiness seems to be attached, according to Indian notions, to the Samaveda, if reliance may be placed on the inference suggested by the etymology of its name, which is expounded as denoting something which defrays sin." And this inference, we may remark, is countenanced by the circumstance of Krishna, when enumerating, in the Bhagavat Gita, various orders of beings and things, to the chief of which he compares himself, declaring, that "among the Vedas, I am the Saman." It may be said, however, that this Veda more especially relating to music, over which Krishna, the Hindoo Apollo, presides, he may advert only to its harmonious pre-eminence.

262. "Let the learned," Menu commands, "read the Veda on every lawful day, having first repeated in order the pure essence of the three Vedas, namely, the Pranava, the Vyahrta, and the Gayatri." Of these fee under O'M. xi. 262. "A priest who should retain in his memory the whole Rigveda, would be absolved from guilt, even if he had slain the inhabitants of the three worlds, and had eaten food from the fouleit hands."

263. "By thrice repeating the Mantras and Brahmanas of the Rig, or those of the Yajuth, or those of the Saman, with the Upanishads, he shall perfectly be cleansed from every possible sin."

264. "As a cloud of earth, cast into a great lake, sinks into it, thus is every sinful act submerged in the triple Veda."

266. "The primary trilateral syllable, in which the three Vedas themselves are comprised, must be kept as secret as another triple Veda: he knows the Veda, who knows the mythic fence of that word." Of which see under O'M.

In the above texts from Menu, we see the propeney of the Hindoos to bring every thing into a ternary arrangement. The three Vedas, and the triple Veda, are ever recurring. In a hymn by Sir W. Jones to the fun, or rather to its ruler, Suria, he says,

"Nor e'en the Vedas three to man explain
Thy mystic orb triform, though Brahma turn'd the tritron."

See SURYA. See also TRIMURTI for many instances of this disposition for trine classification.

The philosophical writers and their disciples, who professed to adhere closely to the doctrines of the Veda, are called Vedanta; which see.

On the age of the Vedas, we have to observe, that Sir W. Jones (Af. Ref. vol. i.) rejects their claim to the very high antiquity that some warm advocates were disposed to affix to them: he could never believe that they were actually written before the flood; but ventures to assert, that they are far older than any other Sanscrit composition. And in vol. ii. he says, that he "firmly believes, from internal and external evidences, that three of the Vedas are more than three thousand years old." And in vol. iii. that they appear to stand next in antiquity to the five books of Moses. In the preface to the Institutes of Menu, the learned translator deems the three first Vedas to have been composed about three hundred years before the Vedantins, and about five hundred before the Puranas, which is fully corroborated not the production of Vyasa. The Institutes he supposes to have received their present form about 880 years before Christ's birth. By one mode of reckoning, the highest age of the Yajurveda is carried to 1580 years before the birth of our Saviour, (which would make it older than the Pentateuch,) and the Institutes must then be ascribed to about 1280 years before the fama epoch: but Sir W. Jones deemed the former date of 880 years B.C.

Veda.

The following is the concluding paragraph of Mr. Colebrooke's very instructive paper on the Vedas, in the eighth volume of the Asiatic Researches, to which we have already acknowledged our obligations for a portion of this article.

"The preceding description may serve to convey some notion of the Vedas. They are too voluminous for a complete translation of the whole; and what they contain would hardly reward the labour of the reader; much less that of the translator. The ancient dialect in which they are composed, especially that of the three first Vedas, is extremely difficult and obscure; and though curious, as the parent of a more polished and refined dialect (the classical Sanscrit), its difficulties must long continue to prevent such an examination of the whole Vedas as would be requisite for extracting all that is remarkable and important in those voluminous works: but they defer to be occasionally consulted by the Oriental scholar." See SHANKAR.

We shall now proceed to notice, as briefly as we can, the fabled and believed origin of the Vedas; the reverence in which they are held by Hindoos; their supposed antiquity; and some other points that may incidentally arise in the course of such considerations.

In the Institutes of Menu, chap. i. v. 23, it is laid down, that "from fire, from air, and from the fun, He (the supreme Ruler) milked out, as it were, the three primordial Vedas, named Rich, Yajuth, and Saman, for the due performance of the facricles."

Chap. iv. 124. "The Rigveda is held sacred to the gods; the Yajurveda relates to mankind; the Samaveda concerns the manes of ancestors; and the found of it, when chanted, raises therefore a notion of something impure."

A commentator on the fifth of these texts explains it by remarking, that the Rigveda opens with a hymn to fire, and the Yajurveda with one in which air is mentioned. Another commentator has recourse to the popular notions respecting the renovations of the universe, at the end of the periods called Kalpa. "In one Kalpa the Vedas proceeded from fire, air, and the fun; in another, from Brahma at his allegorical immolation." See KALPA and PARUSHA.

The most general belief is, that the four Vedas issued from the four mouths of Brahma, as the like number of individuals did in whom originated the four great civil sects, from appropriate parts of his body (see sects of Hindoos); the Brahman, or divine, from his mouth. Now Brahma is fabled to have once had five heads, and in this article we have noticed a fifth Veda. Siva, in one of his forms, is also five-headed; hence called Panchamuki; which see. (See also SIVA.) Some authorities attribute the Vedas generally to PAVAKA, the god of fire. (See PAVAKA.) Others to Sarafwati, the goddess of literature, &c. comfort of Brahma. (See SARASWATI.) No female, however, is permitted to read the holy volumes. Sir W. Jones tells us (Af. Ref. vol. iii.), that "the Veda is called also Agama; but this title refers more particularly to a mysterious book, or set of books, so named from having come from the mouth of Siva, as the Vedas proceeded severally from the four mouths of Brahma. The same word means also the Veda." The word Agama, and similar words in other tongues, seem to imply something mysterious. See OGHAM and O'M.
B.C. for the Institutes the more probable. This would give the Yajurveda an age, in 1815, of about 2995 years.

Mr. Colerbrooke (Af. Ref. vol. vii.) infers, from several data there given, the probability that the Vedas were not arranged in their present form earlier than the 14th century before the Christian era; but cautiously marks the inference as vague and conjectural: about 3200 would hence be affirmed as the maximum of elapsed years since the present arrangement of the Vedas. And deducing, by sir William Jones's method, the comparative age of the Puranas, they will be 2500 or 2600 years old at most; and the Institutes 2800. See Purana and Menu.

As to the relative age of the different Vedas, some differences of opinion will have been seen to exist. We shall only remark farther, that Mr. Wilkins, in the preface to the Gita, observes, that Krishna throughout the whole makes mention of three Vedas only; and those, the three first in their present order; the fourth, proving itself a posterior work, mentions him. On this being noticed to some Pandits who affiled in the translation, they expressed great astonishment at it, as it had escaped all the numerous commentators on the Gita. It may be remarked, in passing, that Menu is often mentioned in the Veda, and the Veda by Menu; a proof of interpolation somewhere.

It is evident that the Vedas are anterior to the hereof or reformation of Buddha; one of his leading innovations being the condemnation of the practice of killing and eating animals, as enjoined in the Veda, and by Menu. See Sects of Hindus, and Sra dhia.

So holy are the Vedas esteemed by the Brahman, that no individual of the fourth, or servile tribe of Sudra, is permitted to read them. In this interdict are included several other divine works. Both the poems entitled "Mahabarat" and "Ramayana," are likewise esteemed to contain passages and descriptions too awful for the eye of a Sudra: he may bear them read by a Brahman, who is likely to be careful as to what he communicates. Of this fee under Mahabarat, Ramayana, Sects of Hindus, Sudra, and Vaidya.

The Yajurveda is declared by Menu, in a text quoted above, to "relate to mankind." It is, as already noticed, ascribed to a celestial physician: it contains an entire Upanishad on the internal parts of the human body; with an enumeration of nerves, veins, and arteries, a description of the heart, spleen, and liver, and various disquisitions on the formation and growth of the fatus. From this, and from many texts of Menu, we may perceive that the ancient Hindoos were fond of reasoning, in their way, on the mysteries of animal generation; and on the comparative influence of the sexes in the production of perfect offspring. The physiological disputes on this latter point exacerbated, by mythical warmth, appear to have led to violent schisms in religion, and even to bloody wars. See Sarasanwati and Yoni.

There can be little doubt but the learned world would thankfully receive a faithful interpolated translation of such portions of the Vedas as tend to throw light on the state of knowledge among a people who so early engaged in such disquisitions as are contained in the Yajurveda, above indicated. These would, doubtless, be valuable, and are, indeed, necessary to complete the history of universal philosophy, and to supply the scholars of Europe with authentic materials for an account of the opinions anciently formed on this head by the philosophers of Asia. We will not say how far the Atharvana Veda may deferve the honour of translation. It contains a most complete system of incantations and magical devices; and would be so far curious, as to evince that, both in antiquity and ingenuity, the demagogues of Europe are vastly outtripped by their fainter brethren of the East.

We are not able to state the exact size or extent of the Hindoo scripture, or Veda. The following is as near an estimate as can be made.

The first, or Rig-Veda, contains about 10,000 verses, or rather flanças, of various measures. The second, or Yajur-Veda, is divided into two; the white and the black; together, they include about 9000 verses. The third, or Sama-Veda, about 3000. The fourth, or Atharva-Veda, about 6000. Of glosses, or commentaries, it is not easy to form any but a vague estimate: but we are, we think, warranted in the opinion, that, supposing the whole could be collected and printed in the manner of our dictionary, they would form a work larger than this!

In all Hindoo writings connected in the leart with theology, and, indeed, in many others, extracts from, and allusions to, the Veda, frequently occur. Several articles in this work contain such, and are farther explanatory of the contents of those revered volumes. Those, therefore, dearth of more information herein, are referred to the following: leolatriy, Krishna, Matsyavatara, Saraswati, (in which is an extract of some length descriptive of the powers or energies of that goddes,) Shastri, Subtan, Sects of Hindus, Sani, Sring, Sutra, Trimurti, Upanishad.

Veda is the correct way of writing the title of the Hindoo scripture collectively. In different parts of India it is variously pronounced; and it is variously spelt by European writers. Vedam and Bedam are occasionally seen; these are the modes of pronunciation in the Carnatic. Among the Maharratas, Bede, or Blade, is uncommon; and its reputed compiler is called Beafs, and Beafs Muni. (See Muni.) The Bengali alphabet having no v, Bed or Beda is the usual pronunciation in that quarter.

VEDAM, a name sometimes given to the Veda; which fee.

VEDANGA, in Hindoo Mythology, a name of the fun, more commonly called Surya; which fee. The name of Vedanga seldom occurs, as of the fun; but it is applied to certain portions of books of divine knowledge, as they call them, derived from the Vedas. Of this fee under our article Veda.

VEDANTA, in Philosophy, a sect among the Hindoos, so named from their theory being professedly founded on the doctrines contained in the Veda, or scripture, in a degree exceeding that of any other of the philosophical schools or sytems. (See Ved.) The fundamental tenet of this school consists, not in denying the existence of matter, but in correcting the popular notion of it; and in contending that it has no existence independent of mental perception; that existence and perceptibility are convertible terms; that external appearances and sensations are illusory, and would vanish into nothing, if the divine energy, which alone sustains them, were suspended but for a moment. This opinion seems to have been adopted by Epicurus and Plato, and was maintained in the last century by a writer of our own nation. The founder of this school is named Vajra (which fee), and his theory is comprised in a little tractate in four chapters. An attempt has been made to elucidate the obscurity of this writer by the judicious and learned Sankara, in his commentary on the Vedanta. (See some account of him under the article SANKARA CHARYA.) His esteemed work is entitled "Baha." Sir W. Jones, after reading this commentary with great attention,
tention, affirms that it is not possible to speak in too high terms of so excellent a work; and that until an accurate translation of it shall appear in some European language, the general history of philosophy must remain incomplete. See MIMANSA.

The elegant author whom we have already named, touching on the Indian metaphysics of natural bodies, according to the most celebrated of the Asiatic schools, from which the Pythagoreans are supposed to have borrowed many of their opinions, remarks, that as the old fages of Europe had, as we learn from Cicero, an idea of centripetal force, and a principle of universal gravitation, which indeed they never attempted to demonstrate; so he would venture to affirm, without meaning to pluck a leaf from the never-fading laurels of our immortal Newton, that the whole of his theology, and part of his philosophy, may be found in the Vedas, and even in the works of the Sufis. (See Sufi.) That most subtle spirit, which he suspected to pervade natural bodies, and, lying concealed in them, to cause attraction and repulsion; the emission, reflection, and refraction of light; electricity; cælefaction; sensation and muscular motion, is described by the Hindoos as a fifth element, and endured with those very powers. The Vedas abound with allusions to a force universally attractive, which they chiefly ascribe to the fun, thence called "Aditya," or the Attractor.

Sir W. Jones, in his instructive essay on the philosophy of the Asiatics, proceeds to observe, that from all the properties of men and of nature, from all the various branches of science, from all the deductions of human reason, the general corollary admitted by Hindoos, Arabs, and Turkeys, by Perians and by Chinees, is the supremacy of an all-creating and all-preserving spirit, infinitely wise, good, and powerful, but infinitely removed from the comprehension of his most exalted creatures. Nor are there in any language (the ancient Hebrew always excepted) more pious and sublime adresses to the Being of beings, more splendid enumerations of his attributes, or more beautiful descriptions of his visible works, than in Arabic, Persian, and Sanscrit, especially in the four Vedas, and in many parts of the Puranas. But supposition and praise would not satisfy the boundless imagination of the Vedanti and Sufi theologians; who, blending uncertain metaphysics with undoubted principles of religion, have premised to reason confidently on the very nature and essence of the Divine Spirit, and affirmed in a very remote age, what multitudes of Hindoos and Muslumans affirm at this hour, that all spirit is homogeneous; that the spirit of God is in kind the same with that of man, though differing from it infinitely in degree; and that, as material subsistence is mere illusion, there exists in this universe only one generic spiritual subsistence, the sole primary cause, efficient, substantial, and formal, of all secondary causes, and of all appearances whatsoever; but enlarged, in its highest degree, with a sublime providential wisdom, and proceeding by ways incomprehensible to the spirits which emanate from it.

This doctrine, as it is grounded on the belief of an immaterial Creator supremely wise, and a constant preserver supremely benevolent, differs widely from the pantheism of Spainza and Toland. Our limits will not allow our enlarging on the principles of the Vedanta philosophy.

We have already noticed the admirable commentary by Sanakaracharya on the Vedanta doctrines of Vyasa. In Bengal this work is highly esteemed; but on the western side of India, it is rivalled, in the estimation of the learned, by a more concise gloss, entitled Pauchadahi, thought to be not inferior in clearness and accuracy to the Balnea of Sankara.

From a statement of the fundamental doctrine maintained by the disciples of the Vedanta school, it has been inferred that their philosophy is founded on the contemplation of one infinite Being, existing under two states or modifications. The first is that of a pure, simple, abstract Essence, immovable and quiescent; the second is that of a Being displaying motion or active qualities. Under the first modification he is called Brimh, or the Great Being, and Kuthal, or He who sitteth on high; under the second, he is named Eeh, the Lord, or Jiv, the Soul: or we may say, that Brimh is Being in its state of simple essence; Eeh is Being exciting energy, and causing the phenomena of the material universe; Kuthal is Being existing in sensuous creatures in its pure simple state; and Jiv is Being in a sentient active state.

It is rare to find in Vedanta works any attempt to establish its doctrines by any process of reasoning. The authors announce the principles of their sect in a dogmatical authoritative style, as indubitable truths; or establish their affections by the authority of the sacred text alone, and attribute disbelief to passion and ignorance. Sometimes, indeed, we do perceive an appearance of reasoning and argument, in support of the denial of a material world.

It will be perceived by those who investigate the Vedanta philosophy, that it does not correspond closely either with the Berkeleian, or with any other system known in the western world. (See Berkeley.) It does not teach that the Supreme Being is the soul of the universe, as was taught by Virgil (see Maya); that animate beings are separate detached portions of his essence, or that the visible extended material frame of things is God; but it affirms that the world is one living, unextended, indivisible Being, who produces his energy, and excites in himself the phenomena of sensible things, as well as of sensation, passion, &c. In explaining this syllogism, however, the writers frequently make use of such figures as may mislead one who reads only detached passages of Vedanta works, without examining closely the nature of their doctrines. Hence the Vedantas have been supposed to teach the doctrine of emanations; and it must be admitted that passages occur, even in the Vedas, apparently countenancing this supposition. (See Murty.) In the fourth or Atharva Veda it is said, that "as the sparks proceed from fire, so various kinds of animate and inanimate beings proceed from the incorruptible Being." But the best commentators say, that these expressions do not mean that there are separate individual beings, but only whatever is beheld or perceived is the Divine Essence. The Vedanta opinions cannot be represented by any figure; they must be deduced from plain and simple declarations.

The Vedanta philosophy will be found to correspond with the Berkeleian in this important particular: both deny a material world, referring sensible things to the energy of a living Being. But the analogy appears to extend no farther. In another important particular they are strongly opposed: in maintaining and denying the existence of separate beings, upon whom this energy operates, existing in their minds the ideas of external things. See more on this subject under our articles Mystical Poetry, and Sufi.

Having offered this sketch of the Vedanta theory, the practical maxims of this very extended sect will be easily understood. They teach that perfection consists in reit; that motion or action is the origin of the moral distinctions of good and evil, both of which must be renounced, as they involve and imply each other. To the attainment of this sublime state, it is required that the active faculties be annihiliated, and the passions and affections subdued; that the individual be totally indifferent to external things, animate and inanimate, to parents, wives, children, relations, goods,
or to whatever causes pleasure, pain, &c. This furnishes a reason why, in some Veda works, language very dif-
respectful is held towards such relatives and friends; so dif-
ter to the general rule and usage of the Hindoos. When
by the practice of rigid austeritie, retirement from the world,
and contemplation, this quiescent state is attained, the soul
perceives that it is Being, and that Being is all things; and
thus the soul becomes the one Infinite Eeeence. Some
branches of this rigid austeritie and contemplation are called
Tapas and Jap. (See under those words for some account
of these practices; and under Sects of Hindoos, and Yooi,
of those who practise them.) Action, say the Vedantis, or
religious performances, do not conduct the soul to the state
of the Eternal but to Swarga (which fee), where it con-
tinues, until the holiness it hath accumulated be nearly ex-
pended by the enjoyment of happiness; when it returns to
earth, and takes a body corresponding to its remnant of
virtue. Agreeably to this notion, action is condemned, as
it tends to retain the soul in the prison of passion and affec-
tion. Still, while a person continues to perform the com-
mon acts of life, it is incumbent on him to attend to religious
duties and rites.

It has been found expedient farther to modify the doc-
trine, in such a manner as to reconcile it with the ordinary
avocations of life, on which depend the existence of society.
Accordingly it is held, that the renunciation of the world
does not require that a person cease or depart from those
avocations; but only that he preserve his mind in a state of
perfect indifferency and tranquility. "If it be alleged that
the Puranas declare, that Bharata and others did not per-
form the acts of life; we would ask," says the Panditdahi,
"why do you not liken to the Vedas, which declare that
wife men eat, act, and procreate?"

It will be necessary to keep in mind that the Vedanta is
a philosophical, not a religious system; and that a profession
of its tenets is compatible with all the religious sects who
admit the authority of the Veda. This may be said like-
wise of the Sankya, Nyayai, and other philosophical sys-
tems. The religious distinctions of the Hindoos result
from the peculiar or exclusive veneration paid to a particular
deity; and the adoption, as a spiritual guide, of those
books which celebrate that deity as the great Being. On
this point the reader may consult our articles Krishna,
Saraswati, Sects of Hindoos, Sankya, Siva, and
others hence referred to, connected herewith.

VEDENSKAIA, in Geography, a town of Russia, in the
government of Irkutsk; on the Irkut; 34 miles W. of
Irkutsk.

VEDENSKOI, a town of Russia, in the government of
Vologda, on the Ulia; 66 miles E.S.E. of Vielik.—Alfo,
a town of Ruffia, in the government of Archangel, on the
Vokcha; 200 miles E.S.E. of Archangel. N. lat. 58° 43'.
E. long. 46° 44'.—Alfo, a town of Ruffia, in the govern-
ment of Tobolok; 36 miles S.E. of Tomfil.

VEDETTE, in the Military Art, a sentinel on horse-
back, detached from the main body of the army, to discover
and give notice of the enemy's designs.

VEDIANTHII, according to the orthography of Pliny,
written Vefhiatii by Ptolemy, in Ancient Geography,
the name of a people, whose capital was Camelon (Pliny),
or Cemelchon (Ptolemy), situated in the province of the
Maritime Alps, according to the Notitia of the provinces
of Gaul.

VEDRA, a river of Britain, the mouth of which is
placed by Ptolemy on the south-east side, bounded by
the German ocean. Horley differs in opinion concerning
this river from Camden and Baxter: he supposes it to be the
river Tyne, and they conjecture it to be the Were.

VEDRA, Cape, in Geography, a cape of Spain, on the
cost of Galicia. N. lat. 42° 19'. W. long. 8° 51'.
VEDRO, or WEDRA, in Commerce, a liquid meafeure
in Ruffia. The caf, farokowo, or pipe of wine, contains
40 vedros; the vedro, 8 ofmuki or kruihkas; and the
kruihka, 11 7charkays or cups. The vedro in Petersburg
contains 621 French, or 752 English cubic inches; hence
1 vedro = 3¾ English wine gallons, and 3 kruihkas =

VEENE, in Geography. See VEENE.

VEER, in Sea Language, is variously used. Veeing out
the rope, denotes the letting it go by hand, or letting it run
out of itself: thus, they say, Vee more cable; that is, let
more run out.

Veer is also used in reference to the wind: for when
it changes often, and suddenly, they say, the wind veers.—
Or, the wind is said to veer and haul, when it alters its
direction, and becomes more or less fair: thus it is said, to
veer aft, and to haul forward.

Veer and haul, To, is to pull a rope tight, by drawing
it in and slackening it alternately, till the body to which it
is applied requires an additional motion, like the increased
vibration of a pendulum, so that the rope is straightened
to a greater tension with more facility and dispatch. This
method is particularly used in hauling the bow-lines.

Falconer.

VEERAPATCH, in Geography, a town of Hindooftan;
18 miles W.N.W. of Dindigul.

VEERE, or Vere, or Terwve, a fea-port town of Zea-
land, situated on the northern coast of the ile of Walcheren,
communicating with Middelburg by means of a canal. The
name given it signifies, in the language of the country,
"Passage," and was probably acquired by its being the place
from whence they ordinarily pass over to North Beve-
land. Its ancient name was Kamp Vere. The place is reg-
ularly fortified towards the land with strong bulwarks, and
a broad ditch; and towards the sea is a strong wall. The
harbour is very good, but lies much exposed to inundations.
The arsenal is one of the best in Zeeland, and furnished with
all manner of stores for a considerable fleet. This is the
third walled town in the iland of Walcheren, and has the
sixth place in the assembly of the iles of Zeeland. It has
got three gates towards the land, and one towards the sea, where
veffels come from Dort, Ziericz, and other places. The
inhabitants are chiefly occupied in the herring-fishery, which
is their harvef. There is little to be observed in the town
but the fladthoufe, began in 1704, and the great church,
the fleepe of which is low and uninfinifhed; 4 miles N.
of Middelburg. N. lat. 51° 37'. E. long. 3° 35'.

Veer Channel, a channel between the Dutch iles of
Walcheren and Schouwen.

VEERING, in Sea Language, denotes the operation by
which a ship, in changing her course from one board to the
other, turns her helm to windward. Hence it is used in
opposition to tacking (which fee), wherein the head is turned
to the wind, and the ftern to leeward. A ship, having
made the neceffary dispositions to veer, bears away gradually
before the wind, till it blows obliquely upon the opposite
fide, which was before to leeward; and as the ftern necef-
sarilly yields to this impression of the wind, affifted by the
force of the helm, and the action of the waves upon the
fame quarter, the fide which was before to leeward foon be-
comes to windward. Since, by this movement, a ship loifes
ground considerably more than by tacking, it is rarely prac-
tifed except in cafes of neceffity or delay; as, when the
violence of the wind and sea renders tacking impracticable;
or when her course is slackened to wait for a pilot, or fome
other ship in company, &c.
When it becomes necessary to veer the ship, the sails towards the stern are either furled or brailed up, and made to shiver in the wind; whilst those near the head are spread abroad, so as to collect the whole current of air which their surfaces can contain. Hence, while the whole force of the wind is exerted in the fore-part of the ship to turn her about, its effect is considerably diminished, or altogether destroyed, on the surfaces of the after-falls. The fore-part, accordingly, yields to the above impulse, and is put in motion; and this movement, confining with that of the wind, pushes the ship about as much as is necessary to produce the effect required. When he is turned so that the wind will act upon that quarter, which was formerly to leeward, her circular motion will be accelerated by extending some of the falls near the stem, as the mizen, and by placing those at the prow more obliquely, which will wheel the vessel round with her bow to the windward; in the same situation, with regard to the wind, as when close-hauled, or tacking. When the tempest is so violent as to prevent the use of sails, the effort of the wind operates almost equally on the opposite ends of the ship, so that the masts and yards situated at the head and stern counter-balance each other. The effect of the helm is also considerably diminished, because the head-way, which gives vigour to its operations, is at this time feeble and ineffectual. Hence it is necessary to destroy this equilibrium which subsists between the masts and yards afore and abaft, and to throw the balance forward, in order to veer. This is accordingly performed by bracing the foremost yards across the direction of the wind, and arranging those on the main-mast and mizen-mast directly in the line of the wind. If this expedient proves unsuccessful, and it is absolutely necessary to veer, in order to save the ship from destruction, by overbearing or running abroad, the mizen-mast must be instantly cut away, and even the main-mast, if the stem remains incapable of answering the helm by bearing away before the wind. Falconer.

Veering, in Husbandry, a term borrowed of the sailors, and used for the turning of two furrows toward each other, as they must do to begin a ridge; they therefore call the top of a ridge a veering; and they call the two furrows that are turned from each other at the bottom between two ridges, a walking, that is, an ending, because it makes an end of plowing ridges.

VEERSE, in Geography, a town of Germany, in the county of Verden; 10 miles E.N.E. of Rotenburg.

VEGA, LOPEZ DE LA, or LOPE-FELIX DE VEGA-CAPRIO, in Biography, a celebrated and voluminous Spanish poet, was born of a noble family at Madrid, in the year 1562. Having been educated in the university of Alcala, he occupied several honourable posts, and served on board the grand armada defined against England. After the death of his second wife, he took holy orders at Toledo, and obtained admission into the congregation of priests at Madrid; acting as prefident, and professing himself as one of the third order of Franciscans. By favour of pope Urban VIII. he was honoured with the insignia of the knights of Malta, and with the title of doctor of theology. He died in 1635, at the age of 73. He was eminently distinguished as a poet, and regarded as the father of the Spanish drama, excelling, as some have alleged, all poets, ancient and modern, in this kind of composition. His "Theatre" occupies twenty-five volumes, each of which contains twelve plays of various descriptions. One of his biographers lays of him, that "the inundation of Vega's fancy seems to have been more than a deluge of very ordinary matter, in which there is little to be praised but an easy eloquence of language, and a faculty of dramatizing, after a manner, stories of every kind. Three hundred pieces could not possibly have been composed otherwise. Nor was this the principal portion of his literary labours; for he has himself affirmed, that upon a calculation it would appear, that he wrote five leaves of MS. for every day of his life." The high degree of admiration he inspired in his own country appeared from the numerous eulogies of which he was the subject after his death. Morel. Gen. Biog.

VEGA, in Geography, a town of Spain, near the N. coast of Altarias; 34 miles N.W. of Oviedo.

VEGA, Lo, a town of the island of Hispaniola; 24 miles S.E. of St. Jago de los Cavalleros.—Alfo, a town of the island of Hispaniola; 62 miles N. of St. Domingo.—Alfo, a town of Spain, in the province of Leon; 40 miles W.N.W. of Alforaga.—Alfo, a town of Spain, in the province of Leon; 18 miles N.N.E. of Leon.

VEGAMAN, a town of Spain, in the province of Leon; 24 miles N.N.E. of Leon.

VEGENOE, a small island in the North sea, near the coast of Norway. N. lat. 65° 45'.

VEGESELA, in Ancient Geography, a town of Africa, in Numidia, upon the route from Theveste to Sitifus, between Malecula and Timphadis, according to the Itinerary of Antonine.—Alfo, a town of Africa, in the Bybacener territory, on the route from Thene to Theveste, between Sufetula and Meneges. Itin. Anton.

VEGETABLES, in Agriculture and Gardening, are all such plants as are found capable of affording useful products as food for man, and different sorts of live-flock. They are constituted and composed of soft and fleshly and solid parts, the latter of which are formed and arranged in such a manner as to afford proper firmness and support in their different growths; and from which proceed those which are often considered as, in some measure, distinct and different in their nature and uses, as the roots, the stumps, the leaves, the flowers, the fruits, the seeds, and some others.

The first of these, which differ greatly in different sorts of vegetables, are the parts which connect them with the earth or soil, and the main source of their nourishment and support. They are, in all cases, more or less fibrous in some of their parts; and the more perfectly this takes place, the more capable they are of drawing nourishment from the ground on which they grow. It is, consequently, the fibrous radicles and the leaves that constitute the media through which the growth and increase of vegetables are effected. The fixing of these parts in the earth, too, by the ramifications which they send forth, prevents the vegetables from being overturned by winds and other causes. The form or shape and uses of these parts in different kinds of vegetables differ very materially, having in some cases a branching lateral growth, in others a knobby, and sometimes that which is directly downward, in some instances is soft and starchy, and in others woody or sticky, and of no value.

They are very similar in the nature of the different divisions of their parts to the stem or trunk and branches; and may, indeed, be said to be a fort of continuation of the former, terminating in minute ramifications and filaments, and not in leaves; as by burying the branches of certain trees, as the willow, in the earth or soil, as practised by Woodward, and since repeated by many others, and elevating the roots in the atmosphere, there is, as it were, an inverion of the functions of them, the roots producing and becoming buds and leaves, and the branches floating out into radical fibres and tubes, and forming roots. See Root.
VEGETABLES.

The second of these parts are those which stand next in importance in vegetables, when considered merely as such, and which include the branches as well as all the more solid parts of them, consisting principally of different coats, as bark, fleth or wood, according to the nature of the vegetable, and pith, or the middle part. These coats or coverings are differently formed, modified, and constituted, so as to be of different uses in their economy. The part, or layer, which is placed next to the wood, is composed, in vegetables of the tree kind, of a soft white substance, not easily discernible in some sorts of trees, but harder and more apparent in others. It is, as it were, an imperfect wood, or in the state between bark and wood. The wood is the compact, fibrous, hard part or substance which is diffused in the middle of trees, which in annual and biennial vegetables is called the fleth, as has been seen already. Between the above coat and the wood, a new ring of a softer nature is formed every year, which gradually loses its softness as the cold season advances, and which towards the middle of winter is converted into a solid ring of wood. These annual rings, which are visible in most trees when cut through transversely, serve as marks by which to determine their ages in some cases. They seem to decrease in breadth as the trees advance in age; and as they are found to be very unequal throughout in their dimensions, their breadth probably varies as the season may be favourable or otherwise. The wood, however, does not only differ from the coats or bark in the degree of hardiness, but likewise in its structure, which is essentially different; and the seeming conversion of bark into wood, is imagined by some to be entirely a deception.

Thus, if the branch, item, or the root of a tree be cut in a transverse manner, it usually displays three distinct bodies or parts: the bark, the wood, and the pith; each of which is again susceptible of a new division. The bark, where perfectly formed, has a thin covering, that may easily be separated; is in laminae or scales, which, in old trees, are mostly in a loose and decaying state. It is not hollow, but merely defends the interior parts from injuries. It is supposed to be a part of little importance in forest-trees, and the larger shrubs, the bodies of which are firm and of strong texture; but in the reeds, the grasses, and the plants which have hollow stalks, it is of great use, is of very great strength, and appears constituted of a sort of glairy network, which is chiefly fibrous earth, as has been lately ascertained. This is the case in wheat, in the oat, and in different other plants; in some of which it exists in large quantities, and is general in this part of the tribe of the hollow kind. It is serviceable as a support as well as protection from insects in such cases.

The most interior part of the bark is composed of layers, the numbers of which vary with the age of the tree; so that on cutting this part of a tree of several years standing, the productions of different periods may be distinctly seen, though the layer of every particular year can rarely be exactly defined or ascertained. The functions of the different parts of the bark are of great importance to vegetables.

In regard to the wood in trees, it is composed of an external or living part, called sapwood, and of an internal or dead part, termed heart-wood; the former of which is white, and full of moisture, and in young trees and annual shoots reaches even to the pith. It is the great vascular system of the vegetable through which the sap-juice rises, the vessels in it extending from the leaves to the most minute filaments in the roots. Its structure has different important uses in producing new arrangements, and forming new wood.

In respect to the arrangement of the fibres of the wood, there are two distinct appearances in them: as the series of white shining laminae, which shoot from the centre towards the circumference, and which constitute what is termed the silver grain of the wood; and the numerous series of concentric layers, which are commonly denominated the spongy grain, the number of which denotes the age of the tree, as already suggested. The former has many important functions, and is the most distinct in forest-trees; though annual shrubs have even a fymet of fibres similar to it. See Timmer, Sap, and Alburnum.

The item parts of some vegetables are quite hollow; partly, it is supposed, from such vegetables requiring a more than ordinary supply of air in their support, as they are generally those which are of a quick growth.

The pith is the white, innermost substance of vegetables of the tree and other kinds, that is situated in the centres of the items.

In the very infancy of the vegetable it occupies but a small space, but gradually dilates; and in shoots of the annual kind, and in young trees, offers a considerable diameter. Being acted on by the heart-wood, as pressed by the new layers of the sap-wood, in the more advanced age of the tree, it begins to diminish, and in very old forest-trees wholly disappears. As it has lately been wholly removed in different young trees, which continued to live and increase; it is evidently only an organ of secondary importance. In early shoots, in vigorous growth, it is filled with moisture, and is a reservoir of fluid nourishment, perhaps, at the time when it is most wanted. As the heart-wood forms, it is more and more separated from the living part, the sap-wood; its functions become extinct, it diminishes, dies, and ultimately disappears. See Stalk and Trunk.

The third, or the leaves, are parts which are essential to the excellence of vegetables; as when, either of the plant or tree kind, wholly divelved, or only stript of a considerable part of them, they do not shoot in a vigorous manner. They are produced from the coats of the stalks or items, and are of the soft flethly thick kind, or the more thin, bony, or woody sort. They are capable of affording nourishment, and of being of use to vegetables, by the nutrient fluid matters which they hold in reserve in their soft substances, and by the dew, air, and moisture, which they take in and throw off.

In all cases the leaves are similar in their interior organization, and perform the same functions as the above parts, only their structure is finer and more minute. The sap-wood spreads and extends itself from the footstalks into the very extremities of the leaves; it forms a vascular system, and its living powers; some parts of the former of which may be distinctly seen in the leaf. A material use of the leaves is, the exudation of the sap to the influence of the air, heat, and light; for which their surface is extensive, the tubes and cells very delicate, and their texture porous and transparent. In the leaves, much of the water of the sap is evaporated; it is combined with new principles, and fitted for its organizing functions, and probably stalls, in its prepared state, from the extreme tubes of the sap-wood into the ramifications of the cortical tubes, and then descends through the bark. On the upper surface of the leaves, which is exposed to the sun, the external covering is thick but transparent, and is said to be composed of matter polishefit of little organization, which is either principally earthy, or consists of some substance of the homogeneous chemical kind. That in the grasses it is partly fibrous, in the laurel reenous, and in the thorn and maple principally constituted by a substance analogous to wax.
By these arrangements, any evaporation, except from the appropriate tubes, is, it is thought, prevented. On the lower surface of them, the external coat is a thin transparent membrane full of cavities; and it is probably altogether by this surface, it is said, that moisture and the principles of the atmosphere necessary to vegetation are absorbed or taken up.

The leaves in the greater number of plants annually decay, and are reproduced; their decay takes place either at the close of the summer, as in very hot climates, when they are no longer supplied with sap, on account of the dryness of the soil, and the evaporating powers of heat; or in the autumn, as in the northern climates at the commencement of the frosts. In common cafes, the leaves preferre their functions no longer than there is a circulation of fluids through them. The colour assumed in the decay of the leaf, seem, is said, to depend upon the nature of the chemical change; and that as acids are generally developed, it is usually either reddish-brown or yellow; yet there are great varieties. Thus, in the oak it is a bright-brown; in the beech, orange; in the elm, yellow; in the vine, red; in the fycamore, dark-brown; in the cornel-tree, purple; and in the woodbine, blue. The cause of the preservation of the leaves of evergreens during the winter is not well known. It is found that the force of the sap is much less in vegetables of this sort, and there is probably a certain degree of circulation throughout the winter season; their juices are less watery than those of other plants, and probably less liable to be congealed by cold, and they are defended by stronger coatings from the action of the elements. The production of the other parts of the plant may be noticed to take place at the time the leaves are most vigorously performing their functions. If the leaves of a tree be stripped off from it in the spring, it uniformly dies; and when many of those of forest-trees are injured by blights, the trees are said always to become flag-headed and unhealthy in their growth.

The leaves, it is said, are necessary for the existence of the individual tree; the flowers, noticed below, for the continuance of the species.

In the flowers there are several different organs or parts, the forms, vascicular nature, texture, and organization of which serve different important uses and functions. That which contains the rudiments of the seed has it never formed as reproductive, without the aid of the influence of the pollen, or fecundating fluid provided for the purpose. This mysterious impregnation is, of course, necessary to the continued succession of the different vegetable tribes.

It has been noticed, that all the parts of a vegetable seem to contribute to the formation of the flowers and fruits of plants; as, although the latter do not swell and ripen until after the former have fallen, their rudiments or leaf beginnings are in the flowers, of which they properly make a part. These last are conseqently temporary parts of vegetables, allotted to the purposes of generation, terminating, as it were, the old vegetable, and beginning the new one. Fruits confit of nearly the same parts as the flemens of vegetables, as a fort of skin or fine coat, which is a production or continuation of that of the bark of an outer soft pulpy substance, and is the same as that continued from the bark, only that its cells or vessels are larger, and it is more succulent and juicy. There is commonly an inner pulp, which is next to the core; and the core itself is nothing more than a hard woody covering, that includes the seed. It is to be noticed, however, that the formation of the fruit is very various: in some scenes, the fruits are diffiered through the pulpy substance; in some, instead of a core, a strong woody material is met with, including the seed or kernel, which, from its great hardness, is termed a stone; in some, there is a number of seeds; and in others, only a single seed, inclosed in a large mass of pulpy matter. See Fruit.

The seeds are the deciduous parts of vegetables, each seed including the rudiment of a new plant, imbued with the vital principle, which it is capable of retaining for a vast length of time. A seed consists of different parts, as that which is necessary to the production of the new plant or vegetable within the seed, termed the corcule; which is divided and distinguished into the fcaly or ascending part, named the plumule, and the plain defending part, called the rothle; with different others of less importance, some of which are perishable. It has been commonly supposed, and not without probability, that the perfect plant, or the organization necessary to it, exilts in the seed, surrounded by a quantity of farinaceous matter, which serves to absorb moisture, and to furnish nourishment to the corcule, until its parts are sufficiently unfolded to draw support from the soil in which it is placed. This is finely illustrated in the dwarf kidney bean, which, when reaped some time in water, and it begins to swell, may be easily separated into its two lobes, between which is seen the naifant plant or vegetable. The flem, and its connection with the lobes, too, are clearly seen; and numberless vrellas ramify through the lobes, which directly communicate with the embryo plant or vegetable.

And on the external surface of the seed are abforbent vessels, that take up moisture, by which a sort of fermentation is produced, and a liquid material formed, elaborated and prepared by a particular procefs, which is proper for the nourishment and support of the plant or vegetable, in its frist tender growth. In this early growth, the lobes of the seed, which are provided with a mealy material, are likewise found necessary. And the frist leaves, or those which are called seminal, are thought to appear not lefs necessary than the lobes to the perfection of the plant or vegetable; as, if they happen to be broken off or defroyed, the plant or vegetable experiences a proportional loss of strength and vigour in its growth.

There is, therefore, to be distinguished in every seed an organ of nourishment, a naifant plant, and a naifant root. The frist of these, in wheat and many grasses, is a single part; in other instances, it consists of more than two parts; but in the greater number, it is simply divided into two.

The feed, which is the last production of vigorous vegetation, is wonderfully diversified in form. That being of the highest importance to the resources of nature, it is defended above all other parts of the plant, it is said, by soft pulpy substances, in the efculent fruits; by thick membranes, in the leguminous vegetables; and by hard thells, or thick external coverings, in the palms and graffes. Though the matter of the seed, in its common state, may appear wholly inert and inactive; when acted upon by moisture, heat, and air, it soon distinctly develops itself, and becomes a complete plant in root and flem.

The above observations have been chiefly taken from the works of Hooper and Davy, to which the reader may be referred. See Seed.

As vegetables are supplied with proper vrellas, those of the abforbent kind on the surfaces of them take up the nutritious fluid or material, and convey it to the different parts. The surface of a plant has two sets of abforbents, as already seen, which constitute the abforbent organ of vegetables; as the mouths of the vrellas of the radicles of the roots, and those on the surfaces of the leaves. The root, as long as it remains soft and tender, imbibles and takes up the nutritious juices from the earth, by means of the abforbent mouths of its vrellas; but as soon as it be-
VEGETABLES.

comes ligneous, it emits radicles on every side, which continue the absorption, and convey the matters first to the root, and then to the whole plant or vegetable. Thus, if a plant or tree be transplanted, it succeeds with greater certainty, the more absorbent radicles are preferred with the root. The leaves absorb matters from the surrounding atmosphere, in the same manner as the radicles do from the earth, and convey them to the other parts of the plant or vegetable. It is supposed that, by means of the absorbents, water is distributed to every part of the plant or vegetable, and constitutes its principal aliment; as, deprived of this universal fluid, it droops and dies; but, by its influence, is not only nourished, and the vascular parts of the whole fabric diluted, but it contributes greatly to excite the languishing fibres, and in this way to increase the vital power of the vessels. By means of this system of vessels, too, the atmospheric air, which is essential to the growth of vegetables, is absorbed or taken up; as plants in vacuo cannot be evolved from the earth, nor can they afterwards vegetate. This is most probably the reason why seeds, buried very deep in the earth, do not vegetate, but die. See Sap and Vegetable.

There are many matters or principles in different kinds of vegetables, which render them particularly useful in the way of food, or beneficial in the products which they afford. The starch and saccharine principles are particularly important, as potting the qualities of fattening animals in a high degree. See Starch, Saccharine Matter, and Vegeto-animal Matter.

The bitter principle prevails very extensively in vegetables, and the natural fort of it is of great importance and utility in the art of brewing, as checking fermentation, and preferring fermented liquors, &c. And there are many other principles in them, which contribute to different useful purposes in several ways. See Oil, Volatile Oil, Wax, &c.

The particular nature and properties of the several different principles or parts of vegetables may be seen explained in Davy's Elements of Agricultural Chemistry.

The quantities or proportions of nutritive or soluble matters, which are contained in different vegetables, or substances of that kind, are very different, as shown in the table given below from the above work, which comprehends the quantities of this sort of matters which are afforded by a thousand parts of different vegetable substances, when submitted to experiment, green, and in their natural states.

<table>
<thead>
<tr>
<th>Vegetables or Vegetable Substances.</th>
<th>Whole Quantity of nutritious or soluble Matter</th>
<th>Mucilage or Starch.</th>
<th>Saccharine Matter or Sugar.</th>
<th>Gluten or Albumen.</th>
<th>Extract or Matter rendered insoluble during Evaporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middlesex wheat, average crop</td>
<td>955</td>
<td>765</td>
<td>0</td>
<td>190</td>
<td>0</td>
</tr>
<tr>
<td>Sprig wheat</td>
<td>940</td>
<td>700</td>
<td>0</td>
<td>240</td>
<td>0</td>
</tr>
<tr>
<td>Mildew wheat of 1806</td>
<td>220</td>
<td>178</td>
<td>0</td>
<td>32</td>
<td>0</td>
</tr>
<tr>
<td>Blighted wheat of 1804</td>
<td>650</td>
<td>520</td>
<td>0</td>
<td>130</td>
<td>0</td>
</tr>
<tr>
<td>Thick-skinned Sicilian wheat of 1810</td>
<td>950</td>
<td>725</td>
<td>0</td>
<td>230</td>
<td>0</td>
</tr>
<tr>
<td>Thin-skinned Sicilian wheat of 1810</td>
<td>961</td>
<td>722</td>
<td>0</td>
<td>239</td>
<td>0</td>
</tr>
<tr>
<td>Wheat from Poland</td>
<td>950</td>
<td>750</td>
<td>0</td>
<td>200</td>
<td>0</td>
</tr>
<tr>
<td>North American wheat</td>
<td>955</td>
<td>730</td>
<td>0</td>
<td>225</td>
<td>0</td>
</tr>
<tr>
<td>Norfolk barley</td>
<td>920</td>
<td>790</td>
<td>70</td>
<td>60</td>
<td>0</td>
</tr>
<tr>
<td>Oats from Scotland</td>
<td>743</td>
<td>641</td>
<td>15</td>
<td>87</td>
<td>0</td>
</tr>
<tr>
<td>Rye from Yorkshire</td>
<td>792</td>
<td>645</td>
<td>38</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Common bean</td>
<td>570</td>
<td>426</td>
<td>22</td>
<td>103</td>
<td>41</td>
</tr>
<tr>
<td>Dry peas</td>
<td>574</td>
<td>501</td>
<td>22</td>
<td>35</td>
<td>16</td>
</tr>
<tr>
<td>Potatoes</td>
<td>260 to 200</td>
<td>200 to 155</td>
<td>20 to 15</td>
<td>40 to 30</td>
<td>0</td>
</tr>
<tr>
<td>Linseed-cake</td>
<td>151</td>
<td>123</td>
<td>11</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>Red beet</td>
<td>148</td>
<td>13</td>
<td>14</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>White beet</td>
<td>136</td>
<td>13</td>
<td>119</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Parnip</td>
<td>99</td>
<td>9</td>
<td>90</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Carrots</td>
<td>98</td>
<td>3</td>
<td>95</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Common turnips</td>
<td>42</td>
<td>7</td>
<td>34</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Swedish turnips</td>
<td>64</td>
<td>9</td>
<td>51</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Cabbage</td>
<td>73</td>
<td>41</td>
<td>24</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Broad and long-rooted clover</td>
<td>39</td>
<td>31.50</td>
<td>3.4</td>
<td>2.3</td>
<td>5.2</td>
</tr>
<tr>
<td>White clover</td>
<td>32</td>
<td>29</td>
<td>1</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Samfoin</td>
<td>39</td>
<td>28</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Lucern</td>
<td>23</td>
<td>18</td>
<td>1</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Meadow fox-tail gras</td>
<td>33</td>
<td>24</td>
<td>3</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Perennial rye-gras</td>
<td>39</td>
<td>26</td>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Fertile meadow-gras</td>
<td>78</td>
<td>65</td>
<td>6</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Rough meadow-gras</td>
<td>39</td>
<td>29</td>
<td>5</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Crested dog's-tail gras</td>
<td>35</td>
<td>28</td>
<td>3</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Spiked fescue gras</td>
<td>19</td>
<td>15</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Sweet-facented loft gras</td>
<td>82</td>
<td>72</td>
<td>4</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Sweet-facented vernal gras</td>
<td>50</td>
<td>43</td>
<td>4</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Fiorin</td>
<td>54</td>
<td>46</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Fiorin cut in winter</td>
<td>76</td>
<td>64</td>
<td>8</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

These
VEGETABLES.

These substances comprise some of the most important articles of food in different intentions, and it is suggested as probable, that the excellence of them in this view will be found, in a great measure, to be in proportion to the quantities of this sort of matters they yield or afford; though they cannot be regarded as absolutely denoting their value in this way. Some of the matters have the characters of animal substances, as the albuminous and glutinous; sugar is more nourishing, and extractive matter lets fo, than any other principles composed of carbon, hydrogen, and oxygen. Certain combinations of these substances, too, may be more nutritive than others. It is stated likewise, on the authority of Sir Joseph Banks, that the miners in Derbyshire, during winter, prefer oat-cakes to wheaten bread, as they find that this kind of nourishment enables them to support and keep up their strength, and perform their labour better at that season. But that in summer, they say that oat-cake heats them, and they then confume the finell wheaten bread they can procure. It is suppos'd, that even the skin of the kernel of oats has probably a nourishing power, and is rendered partly soluble in the flomach with the flarch and gluten. It is noticed, that in most countries of Europe, except Britain, and in Arabia, horses are fed with barley mixed with chopped straw; and that the straw in this state seems to act the fame part as the husk of the oat. Hard thin-skinned wheats are preferred in some parts to those of the soft thick-skinned kinds, as containing a larger quantity of gluten and nutritive matter. See WHEAT.

In regard to vegetables of the gras kind, the only substances which have been detected in the soluble matters procured from them, are mucilage, sugar, bitter extract, a substance analogous to albumen, and different saline matters; with feeble indications of the tanning principle in some products from after-math crops. The albumen, sugar, and mucilage, probably, it is thought, when cattle feed on gras or hay, are, for the most part, retained in the body of the animal; and the bitter principle, extract, saline matter, and tannin, when any exists, are probably in common voided in the dung, with the woody fibre. From the great similarity of the extractive matter procured from the fresh dung of cows, to that existing in the soluble products from grasses, and some other facts of the fame nature, it appears probable, it is said, that the bitter extract, though soluble in a large quantity of water, is very little nutritive; but probably serves the purpose of preventing, to a certain extent, the fermentation of the other vegetable matters, or in modifying or affording the function of digestion, and may thus be of considerable use in forming a constituent part of the food of cattle. A small quantity of bitter extract and saline matter is probably all that is needed, and beyond this quantity, the soluble matters must be more nutritive in proportion as they contain more albumen, sugar, and mucilage, and less so in proportion as they contain other substances.

In comparing the composition of the soluble products afforded by different crops from the same gras, it was constantly found, that the largest quantity of truly nutritive matter, was in the crop cut when the feed was ripe, and least bitter extract and saline matter; most extract and saline matter in the autumnal crop; and most fecacious matter, in proportion to the other constituent parts, in the crop cut at the time of flowering. It is suppos'd that the greater proportion of leaves in the spring, and particularly in the late autumnal crop, accounts for the difference in quantity of extract; and the inferiority of the comparative quantity of sugar in the summer crop, probably depends upon the agency of light, which always tends in plants to convert fecacious matter into mucilage or flarch.

No differences have been found in the nutritive produce of the crops of different grasses cut at the same season, which could render it possible to establish a scale of their nutritive powers, but probably the soluble matters of the after-math crop are always from one-sixth to one-third less nutritive than those from the flower or seed crop. In this crop, the extractive and saline matters are certainly usually in excess; but the after-math hay, mixed with summer hay, particularly in that which the fox-tail and soft grasses are abundant, would, it is thought, produce an excellent food or fodder.

In the clovers, the soluble matter from the Dutch clover is said to contain much mucilage, and most matter analogous to albumen; all the clovers contain more bitter extract and saline matter than the common proper grasses. When pure clover is to be mixed as fodder, it should, it is said, be with summer hay, rather than after-math hay.

Other observations on this intercellsing subject may be seen in the appendix to the above work.

In cultivation, much use and advantage may, in many cases, be derived from changing the natural habits of vegetables, by fowing the seeds of them or planting them at unusual seasons, by placing them in more dry and warm, or more cold and moist situations, and by altering the time of their flowering, or the length of their duration, by cutting parts of them, or in other ways; as by such means some of them, though annual in their nature, may be made to last and afford crops for two or for several years. Others may furnish two or three green crops the same season, and an early one in the succeeding; and so on in a variety of instances in the garden as well as in the field.

VEGETABLES, Injuries or Destruction of Parts of, the affections and mischiefs which are produced in them by different causes, as those of frost, lightning, insects, and some others. It is well known, that trees of the apple and some other kinds, in field fruit-grounds, orchards, and gardens, have their buds, blossoms, and other parts, often affected or destroyed by a frost of slight or canker induced by such causes; in consequence of which there are great failures in the crops of them. The mischievous effects of frost in this way may frequently be clearly traced, though they are seldom greatly injurious, when it is of the dry kind, unless it be very severe; but most certainly, when it succeeds to large falls of rain. Sudden transitions from heat to cold are hurtful to vegetables; by warmth the vessels of them are expanded, and their juices flow freely: a sudden application of cold causes a sudden contraction of their parts, without a proportionate diminution of the fluids which they contain, which being thus unnaturally checked in their current, become flagrant and diseased. Rain is congenial to the growth of vegetables; and while Nature dispenses them to open all their pores, by which its influence can be received, when overtaken by frost in such a situation, the consequence must be injurious or fatal. It has been said by a philosophical writer, in speaking of the action of cold or frost, that besides its opposition to the adequate fluidity of the vegetable juices, it must be unfriendly to the animation of the fluids, causing either local canker, or death of the whole vegetable. That when the vegetable fluids are chilled, and converted into ice, their bulk is vastly enlarged, and this enlargement sometimes takes place with such extreme violence as to rend them in pieces. In this way, frost, it is thought, destroys those parts of vegetables which are most succulent, particularly in that form of it which is called hoar-frost, or rime, so common in the spring season. The moisture of fog too is said to be equally mischievous, as far as it extends. Thus, in a fruit district, in one night at this season, a mott promi-
ING BLOOM HAS BEEN CUT OFF; THE ELM, OAK, AND ASH, BEING INJURED AT THE SAME TIME; THE LINE OF DEVASTATION WAS PRECISELY MARKED, PROCEEDING IN A HORIZONTAL MANNER THROUGH A CERTAIN VALE TRACT, TO THE HEIGHT OF ABOUT THIRTY-FIVE FEET; THE TREES THAT GREW ON HIGHER GROUND NOT BEING TOUCHED. THE EXPLANATION OF THIS CIRCUMSTANCE FEEMS, IT IS SAID, TO BE, THAT THE FOG, WHICH RIFES MORE OR LESS EVERY EVENING, ESPECIALLY AFTER A WARM DAY, WAS, DURING THE NIGHT, IN THIS INSTANACE, SUDDENLY SUCCEEDED BY A SMART FROST, WHICH FREEZED THE MOIST ENDED PARTS TO THE POINT OF ELEVATION OF THE FOG, AND PRODUCED THE MISCHIEF. COLD WINDS COMING ON AFTER A DAY OR TWO OF FROSTY-SHINE, MAY LIKELY PROVE DESTRUCTIVE OF THE BLOOM IN SUCH CASES OF APPLE-TREES IN THESE FRUIT-GROUNDS. ON THIS ACCOUNT, IN A NORTHERN EXPOSURE, THE FRUIT IS NOT UNFREQUENTLY PRESERVED, WHILE IN OTHERS IT IS DESTROYED; FOR THE FUN, NOT HAVING MUCH INFLUENCED THE TREES IN THIS SITUATION, THEY ARE LEFT TO THE PREVAILING TEMPERATURE OF THE LEAFON, AND THIS ENABLED TO BEAR THE COLD NORTH-EASTERLY BLASTS OF THE NIGHT WITHOUT BEING HURT.

THOUGH THE SECONC OF THE ABOVE CAUSES IS MUCH BELIEVED TO BE HURTFUL TO THE TREES IN FRUIT-GROUNDS BY THOSE ENGAGED IN THEM, THE OPINION HAS BEEN CONSIDERED AS UNFOUNDED BY SOME. IF, HOWEVER, THE PARTIAL MANNER IN WHICH SOME TREES AND HEDGES ARE AFFECTED BE CONSIDERED, IT WILL BE DIFFICULT, IT IS THOUGHT, TO ACCOUNT FOR THE EFFECT IN ANY OTHER WAY. THIS CAUSE, LIKE THAT OF FROST, MAY AFFECT VEGETABLES BY ITS EXPANSIVE POWER, BURLING THEIR VEILS AS IT PALES THROUGH THEM. IN SOME CASES, A LINGLE LIMB OF A TREE, IN ONE NIGHT, LOSES ALL ITS FOLLAGE, AND CAUSES TO VEGETATE: IN OTHERS, ONE TREE OF MANY IN A FRUIT-GROUND; OR A ROW OF TREES IN THE SAME DIRECTION; AND SOMETIMES WHOLE FRUIT-GROUNDS ARE AFFECTED IN THE SAME MANNER, AND ARE DIFFICULT OF RECOVERY. THE MISCHIEF IS MOSTLY DONE IN A NIGHT, AND WITH GREAT UNCERTAINTY, AS NEIGHBOURING TREES IN THE SAME DIRECTIONS OFTEN ESCAPE.

IN RESPECT TO THE LAST OF THESE CAUSES, IT HAS BEEN OBSERVED, THAT FROSTY NIGHTS, WITH A NORTH-CAST WIND, IN THE SPRING, FOLLOWING A WARM DAY, ARE PARTICULARLY INJURIOUS TO THE BLOOM OF THE APPLE; THE WARMTH OF THE DAY HATCHES THE OVA OR EGGS OF THE INSECT WHICH BREEDS IN IT, WHILE THE COLDRNS OF THE NIGHT, BY CHECKING THE PROGRESS OF THE FAP, KEEPS THE BLOOM IN ITS HALF-EXPANDED STATE, TO FORM A NIDUS FOR THEM. THE OPINION OF APPLE-GROWERS, TOO, IS IN SUPPORT OF THIS IN MOST DISTRICTS AND SITUATIONS. BUT WHETHER INSECTS ARE CAUSED IN THIS WAY, OR BY THE DISEASED FLATE OF THE TREES, THE MOST PROMISING MODE OF PREVENTING THE RAVAGES AND DESTRUCTION WHICH THEY COMMIT ON THE LEAVES, BUDS, AND BLOOMS OF SUCH TREES, IS THAT OF SMOKING THEM Well BY MEANS OF SOME PROPER SUBLUSTANCE, TO WHICH A LITTLE SULPHUR HAS BEEN ADDED. IN THIS WAY THEY MAY MOSTLY GET THE BETTER OF WITHOUT MUCH TROUBLE.

THE OTHER CAUSES OF MISCHIEF HAVE BEEN NOTICED UNDER THEIR PROPER HEADS.

MANY OTHER Sorts OF VEGETABLES OF THE TREE AND OTHER KINDS ARE LIKELY TO BE AFFECTED, INJURED, OR DESTROYED IN THEIR PARTS BY THESE CAUSES, THE PREVENTION OF WHICH MAY BE ATTEMPTED BY SIMILAR MEANS. SEE DISCUSES OF PLANTS IN SMITH'S INTRODUCTION TO BOTANY.

VEGETABLE ACID. SEE ACID, AND VINEGAR.

VEGETABLE AFHES, IN AGRICULTURE, THE SUBLUSTANCES OF THIS SORT WHICH ARE PRODUCED FROM VEGETABLES OF DIFFERENT KINDS BY INCINERATION. THEY DIFFER MUCH IN THEIR NATURE AND QUANTITIES AS AFFECTED BY DIFFERENT VEGETABLES. IN GENERAL, THOSE OF THE HERB SORT FURNISH FOUR OR FIVE TIMES, AND THOSE OF THE SHRUB KIND TWO OR THREE TIMES AS MUCH ASHES AS THOSE OF TREES. THE LEAVES IN COMMON PRODUCE MORE THAN THE BRANCHES, AND THE BRANCHES MORE THAN THE TRUNKS. THOSE BURNED IN A GREEN FLAME AFFORD MORE ASHES THAN SUCH AS ARE CONSUMED IN A DRY CONDITION. THE QUANTITIES OF ASHES THAT ARE AFFECTED BY SOME COMMON VEGETABLES ARE, IN 1,000 PARTS OF THE THISTLE, 53 OF ASHES; IN THE NAME NUMBER OF FERM, 62; IN THAT OF THE LOW-THISTLE, 190; IN WORMWOOD, 730; IN VETCHES, 275; IN BEANS, 200; AND IN FUMITORY, 790; WHILE IN THE NAME NUMBER OF PARTS OF THE POPULAR TREE, 7 OF ASHES ARE ONLY AFFECTED; IN THE BEECH, 12; IN THE OAK, 15; IN THE ELM, 39; AND IN THE CACE, 55. SUCH VEGETABLE ASHES AS CONTAIN ALKALIES, ARE CAPABLE OF BEING APPLIED TO LAND WITH ADVANTAGE IN SOME CASES. THE OXYS OF METALS ARE SOMETIMES FOUND IN THE ASHES OF VEGETABLES, BUT ONLY IN VERY MINUTE QUANTITIES. IN CASES WHERE THE VEGETABLE ASHES ARE OF A REDDISH-BROWN APPEARANCE, THEY ARE MOSTLY IMPREGNATED WITH THE OXYS OF IRON; BUT WHERE THEY HAVE A BLACK OR PURPLE CAST, WITH THAT OF THE OXYD OF MANGANESE; AND WHERE THESE DIFFERENT COLOURS ARE BLENDED, THEY CONTAIN BOTH SUCH SUBLUSTANCES OF THE OXYD KIND.

THE DIFFERENT SUBLUSTANCES CONTAINED IN VEGETABLES, OR AFFORDED BY THE INCINERATION OF THEM, ARE EXTREMELY VARIOUS, AND HAVE BEEN CONSIDERED UNDER THEIR SEVERAL PROPER HEADS. SEE SULPHATE OF POTASH, &C. PHOSPHATE OF LIME, &C.

THE QUANTITIES OF SOLUBLE SUBLUSTANCES, METALLIC OXYS, AND OTHER SUBLUSTANCES WHICH ARE AFFECTED BY THE ASHES OF DIFFERENT VEGETABLES, MAY BE SEEN IN A TABLE INSERTED IN THE "ELEMENTS OF AGRICULTURAL CHEMISTRY."

THESE POINTS MAY SERVE TO DIRECT AND AFFICT THE FARMER IN THE PREPARATION AND APPLICATION OF VEGETABLE ASHES IN THE MOST ECONOMICAL AND BENEFICIAL MANNER, WHERE THEY CAN BE HAD RECURSIVE TO THE PROPERTY AS A DRESSING ON LAND OR OVER CROPS OF SOME KINDS. SEE ASHES AND WOOD-AFHS.

VEGETABLE EARTH, OR MOULD, THAT SORT OF Fine REDUCED EARTHY MATERIAL, WHICH IS FORMED AND PRODUCED BY THE DESTRUCTION AND DECAY OF DIFFERENT VEGETABLE PRODUCTIONS AND MATTERS, EITHER UPON THE SURFACE, OR IN THE MORE INTERIOR PARTS OF THE LAND. THE TERM IS, HOWEVER, MORE GENERALLY APPLIED TO THE PECULIARY EARTHY SUBSTANCE, OR BODY, WHICH CONTRIBUTES THE SUPERFICIAL LAYER OF FIN BLACK OR DARK COLOURED MOULD, IN WHICH PLANTS, FOR THE MOST PART, SITTE OR TAKE ROOT, AND GROW IN EVERY SORT OF GROUND OR SOIL, AND WHICH VARIES GREATLY IN DIFFERENT SITUATIONS AND CIRCUMSTANCES.

IN CONSEQUENCE OF THE VARIATIONS THAT HAPPEN IN RESPECT TO ITS DEPTH, AND THE PROGRESSES THAT HAS MADE TOWARDS THE STATE OF PERFECT COMPOSITION AND DESTRUCTION, AS WELL AS FROM THE NATURE OF THE VEGETABLE SUBLUSTANCES AND MATTERS OF WHICH IT IS CONTRIBUTED AND COMPOSED.

IT HAS BEEN SUSPECTED TOO, AS ACQUIRING SOME DIVERSITY OR DIFFERENCE OF QUALITY ON ACCOUNT OF ITS BEING MORE INTIMATELY OR MORE LOOSELY MIXED AND INCORPORATED WITH THE OTHER BODIES AND MATERIALS THAT ARE FOUND TO COMPOSITION, AND, LIKEWISE, THAT THE EARTHY MATERIAL WHICH IS FORMED FROM THE DESTRUCTION OF SOME PARTICULAR FORMS OF VEGETABLE MATERIALS, MAY BE BETTER SUITED FOR THE PURPOSES OF VEGETATION THAN THAT WHICH PROCEEDS FROM OTHERS.

IT IS AN EARTHY MATERIAL, WHICH, BEING PRODUCED BOTH BY THE DISSOLUTION AND REDUCTION OF VEGETABLE MATTERS, AS ABOVE, MAY PROBABLY BE PARTIALLY ACQUIRED FROM THE AIR, WATER, AND LIGHT; BY THE PROCESSES OF VEGETATION, AND PARTLY FROM THE PROPERTIES OF THE LAND IN OR ON WHICH IT EXITS. IN SOME CASES IT IS OF VERY CONSIDERABLE DEPTH, WHILE IN OTHERS IT FORMS MERE A THIN SUPERFICIAL COAT OF COVERING OF THE LAND; AND THERE ARE STILL OTHER CASES, WHEREIT IS SCARELY VISIBLE, OR MET WITH AT ALL.

IT MAY BE NOTICED, THAT VEGETABLES, IN CONSEQUENCE OF THEIR HAVING IN THEIR COMPOSITION A LARGE PROPORTION OF MEALAGINOUS MATTER IN A STATE OF MIXTURE WITH THEIR OTHER MATERIALS OR SUBLUSTANCES, ESPECIALLY IN SOME SORTS, ARE IN SOME DEGREE...
greek capable of being dissolved in water, though the external coats or coverings of living plants, principally on account of the resinous material that enters into their composition, are preferred from its action and effects. It is plain, that in consequence of the first of these circumstances, and that of earthly matters being contained in them, which had been taken up in the state of solution or diffusion with their fresh fluids or juices while growing, that considerable quantities of vegetable earth or mould must be continually formed and deposited on lands by the natural dissolution and decay of such bodies. But its formation and provision are much more abundantly effected by means of the putrefaction and destruction of such vegetable productions as are cut down, or otherwise defrayed, on the surface of the land, and the laying of different kinds of manures and compost materials upon it. In cases where these have been in great abundance for a long time, there is mostly, it is said, a deep rich surface bed of this earth or mould; but that where few vegetable products, and those of the less luxuriant kind, have been left to undergo the above process, or little affittance given by means of manures, the crust of surface earth or mould is commonly very thin and poor. In all cases, it is evident that the dissolution and decay of vegetable materials must be greatly promoted and expedited by a proper degree of moisture, and suitable state of heat; the atmosphere being at the same time in a proper condition for the purpose. The close and stagnated state of different sorts of luxuriant tall growing crops of the grass, herb, plant, or other kinds, have likewise much effect in the forming and elaborating of this mouldy material, by the decaying foliage thereby promoted, falling down and being so much deposited on the land.

All these materials, during the state of decay, undergo different changes in their constituent principles or parts; the water which they contain being decomposed, pure air or oxygen is absorbed, heat digested, and new compositions of the aerial and fafie kinds formed; by which means a number of matters are prepared and fitted for the use and support of vegetable life, which could not have been supplied in any other way, as well as rendered much more extensively applicable in this intention than they could otherwise possibly have been.

It is advised, that in order to promote the formation and production of vegetable earth or mould, recourse should be had not only to such substances as accelerate the putrefactive process, but also to such as have a tendency to increase the solubility of the vegetable earth or mould of the land itself; and that the first of these purposes may be promoted and attained by the application of such substances and materials as have been found useful in changing vegetable matters into the state of mucilage, such as the carbonate of lime, or effeite lime, marle, chalk, and calcareous matters in general, and likewise some earthy fafie substances, as the refuse of salt manufactories, and of other kind. That the latter of such intentions is to be attempted by the use of different substances and matters that are of an alkaline nature; such as the ashes produced by the burning of various green vegetable materials, the urine of animals, the liquor of dunghills and pits, night-soil, and many other such animalized matters and substances. There are many other ways, too, in which vegetable earth or mould may be made and rendered more abundant in land; such as the frequent growth of those kinds of crops that cover the ground in a close full manner, so as to produce a confined state of the air, as already suggested; the confuming upon, or turning down into the ground, full, rich, and succulent green crops, by which much vegetable matter is brought into a state of decay; and by the causing of the destruction and evacuation of insects of various sorts, which are predominant in land, by the use and application of such substances and matters as have the power of effecting these different purposes and intentions.

It must be noticed, however, that it has been remarked by the writer of the work on the "Connection of Agriculture with Chemistry," that too large a proportion of vegetable matter in land, particularly where it is exposed to be much acted upon by the oxygen principle of the atmosphere, is liable to render the ground too loose and open in its nature for the growth of most sorts of crops of the grain kind; winter corns being, especially from the sudden alterations of frost and thaw, frequently thrown out of such lands, and almost wholly destroyed. In cases of this nature, great advantage may, it is said, be derived from the use of different matters of the fafie kind, and lime in its satu rated state, as by such means the vegetable parts of the land will be brought to their most proper and productive state, in so far as the growth of crops is concerned.

It has been conceived too by the same writer, that the ab sorption of the oxygen principle from the surrounding atmosphere, or what is termed the process of oxygenation, is the principal cause of the retention of vegetable matter on the surface of the earth, in deep peaty lands as well as others, but especially in such as have been long in a state of tillage, or under the plough. This process having the power, it is supposed, of rendering the vegetable matter less destruc tile, scarcely any of it being carried away in a state of di solution by rains, or water in other ways, an accumulation takes place, which, under other circumstances, could not have happened. The indestructible state of vegetable matters under these circumstances, and their constant accretion, may, it is thought, be referred to the insoluble compounds produced by the action of pure air on such inflammable substances. The insolubility, to a certain degree, of this system adopted by nature, is undoubtedly, it is supposed, to be preferred to one more completely soluble; for it is evident, it is said, that if putrefaction or oxygenation had pos sed the power of rendering all the vegetable matter, by a speedy process, soluble in water, two pernicious confequences must have followed: the rains would have washed down such extracts, and soluble matters, as flax as formed, into the rivers and springs, contaminating the waters, and rendering them unfit for the existence of fishes, or for the use of terrestrial animals. The fee in process of time would thereby receive all the vegetable and animal produce of the dry land, and the earth would ultimately become barren, confining alone of the simple earths, without any admixture of vegetable matter; consequently there could be no accumulation of this substance on the surface, as is the case to an immense degree at present. As such, there cannot, it is conceived, be a doubt, but that the present incomplete processes of putrefaction, oxygenation, or solution of organic bodies, has been established by the great Creator of all things for wise and benevolent purposes; especially when it shall be understood, that the apparatus and manures of this, to a certain degree, insoluble system, are, as they respect agriculture and vegetation, to be remedied, when necessary, by the ingenuity and industry of man. It is consequently sup posed that the vegetable matters which exist in lands, from their admitting different degrees of this proceeds, and, of course, becoming more or less insoluible, have different powers in forwarding the growth and support of plants. Where the exposure to these causes has been long, they are generally more insoluible in their nature than where the contrary has been the case. See Oxygenation.

Upon the whole, vegetable earth or mould should be accumulated
nulated in grass lands as much as possible; but where grain-crops are to be raised, a proper mixture of other earths is necessary, to give them stability, and prevent their being thrown out of the ground.

**Vegetable Fly**, in *Natural History*, an insect found in the island of Dominica, and (excepting that it has no wings) resembling the drone in size and colour. In the month of May this insect buries itself in the earth, and begins to vegetate. By the latter end of July the tree is arrived at its full growth, and resembles a coral branch; being about three inches high, and bearing several little pods, which dropping off become worms, and afterwards flies, like the English caterpillar. Dr. Hill, in his account of this production, to whose examination it was submitted, observes, that the *cicada* is common in Martinique, and in its nymphal state, in which the old authors called it *cittigmata*; it buries itself under dead leaves to wait its change; but when the season is unfavourable, many perish; and that the feeds of the *clavaaria sobolifera*, which is a fungus producing foboles or shoots from its sides, and growing in putrid animal bodies, find a proper bed on this dead insect, and grow. This, he says, is the fact; though the untought inhabitants suppose a fly to vegetate, although there exists a Spanish drawing of the plant's growing into a trifoliate tree; and it has been figured with the creature flying with this tree upon its back. Phil. Trans. vol. lxx. p. 270, &c.

**Vegetable Oil.** See OIL.

**Vegetation.** In *Vegetable Physiology*. See Germination, Circulation of Sap, Spiral Vessels, Leaf, &c.

Vegetation, as it relates to Agriculture and Gardening, is of considerable importance, by explaining the nature and means by which plants and crops receive nourishment and support, and are the best promoted in their different growths. In respect to grain, seeds, and fets, it seems evident, from the experimental enquiries of Mr. Gough and others, that during the act or process of their germination or infant vegetation, they draw the oxygen principle from the surrounding atmosphere, part of which is retained, and the remainder thrown off, charged with a portion of carbon; and that, in this process or operation, the substances of the feed-lobes, or other parts that answer the same purpose, of course undergo a considerable change, an additional proportion of the oxygen principle entering into their composition, while a portion of their carbon is dissipated and destroyed; that by this alteration in the proportion of their constituent principles and parts, the saccharine fermentation is induced to take place, and sugar is formed, as demonstrated in the operation of malting grain; and that the sugar and carbonic acid, from their being more soluble in water than in the oxyd of farinaceous matter, easily combine with the moisture in the capillary vessels of the feed or other substances, and find a ready passage to the germ; the vegetative principle being thus brought into action by a stimulus suited to the particular nature of it; and that by the decomposition of the feed-lobes, or other parts, a nutritious fluid being thus formed and distributed through the infant plant, its organs are excited to exert their peculiar specific actions in decomposing the nourishment conveyed to them, and in forming new oxyds from the elementary principles of it, in order to the increase and evolution of the vessels and fibres.

As it is in this manner that the first states of germination or vegetation is suppose to commence, it would appear that in such feeds and fets, in order to their undergoing these different changes the most readily, and in the most perfect manner, on which, probably, healthy growth may materially depend, they should not only be properly deposited in the earth or foil, but, in the case of grain and feeds, be so well ripened and filled with farinaceous or mealy matter, and poils such a degree of moisture, as may dispose them to undergo such changes in a suitably speedy manner; while, at the same time, a due supply of proper nutritious matter is afforded for the perfect germination and early growth of the infant vegetables or plants. They should not confluence be put too deep in the ground as to be too much excluded from the action of the air, or be sown or set when in too dry a condition from the state of the feason or other causes, but be constantly suffered to have as much of the agency and influence of such forwarding powers as may be necessary for the perfect vegetation and growth of the plants or crops.

Others conclude on the grounds, and for the reasons that are stated below, that two of the airs of which the atmosphere is compounded, are absolutely necessary to the nourishment and proper growth of vegetables; those of vital air or oxygen, and mephitic air or azote. It is found from different trials, that plants placed in vital or oxygen air grow larger, become more powerful, and are greener than those put in that of the atmospheric kind. That if the feeds of the kidney-bean and the pea be put into earth of the fellous kind, and be sprinkled with water mixed with a small portion of the oxygenated muriatic acid, in which oxygen the utmost abound and the most loosely adheres, they germinate much sooner than if sprinkled with pure water; but that if feeds be immered in diluted muriatic acid, they become black and rugous, and never germinate. That in no kind of air deprived of oxygen do plants vegetate; for if they be placed in azotic or mephitic air, in carbone or fixed air, they become fiscid and drooping, it is said, by the heat of the fun, and gradually die away. And that in nitrous air, plants become inactive in a few hours. It would appear from this, it is thought, that the portion of vital or oxygen air imparts a natural stimulus, which is highly necessary to excite the fibres and sustain the living power and strength of the vessels of plants; and that, lastly, this air, with the peculiar acidifiable bals, generates the various acids which are found in plants or vegetables.

As the gluten of the fibres of vegetables consis of carbon, chemically combined with azote, it follows, it is sup-posed, that the azotic air is absorbed or taken up by the plants; and that it is by this means that vegetables increase so rapidly in rich soils, cemeteries, and other places where animal and vegetable matters putrefy and decay in large quantities in or on the ground.

Carbonic air too dissolved in water is absolutely necessary to the vegetation of plants in order to provide their carbonic principle, which is a constituent part of the fibres, oil, mucilage, and other vegetable principles.

It is suggested, that plants appear to derive their caloric or matter of heat from the surrounding atmospheric air. Hence it is that the shades of trees are so cool; and that nothing is more healthy for almost all plants in their vegetation and growth, than mild tepid flowers, by which they obtain water together with this principle. That, lastly, feeds do not vegetate in the cold, and many plants die in it. Heat too is evidently of much benefit in vegetation, as giving the natural colour to the foliage, flowers, and fruits of plants, causing or promoting the flow and circulation of the sap-juice, increasing the saccharine matter, and promoting the favour of most sorts of fruit.

Light too contributes to the life and healthy growth of plants; for those which vegetate in atmospheric air deprived of its light, as in the night and dark places, become pale and weak; but in the day-time, strong and coloured.

The
The rays of light, likewise, appear to contribute to stimulate plants, with the various gases or vapours they absorb and take up from the air.

Pure air has also been found by many to be essential to the production of perfect seeds, pulp, grain, and fruit, and that by its action upon or being taken up by the soil, it has very powerful and beneficial effects in promoting vegetation and the perfect growth of plants and crops.

Thus, water, air, and these other matters, appear to have a very great share in the vegetation and nourishment of vegetables, but especially the two former. The first has been considered as indispensably necessary to the process, and as supplying the principal materials of vegetable juices. It is unquestionably the chief medium through which the various nutritive matters derived from the soil, is conveyed to the plants which grow upon it. But it has been supposed more favourable to the vegetation and growth of grains plants or crops than those of the grain kind; as crops of grains may be continually produced by watering, while with those of grain it has been found to be wholly impossible. It is found, however, that soft water, such as that of rivers, rain, or which has been exposed to the action of the sun for some time, is more favourable to vegetation, than such as is hard, as that of springs, or which is impregnated with metallic substancess and other such matters. The author of Phytologia considers the first three things necessary to the infant vegetation and growth of plants to be heat, water, and air, as furnishing the general cause of dryness, the menurium in which vegetation is conveyed, and the principle of excitability to perpetually necessary to all organic life.

However, besides these different matters, other agents are necessary, after the plants have been formed and evolved, to the perfect vegetation and growth of the crops, as those of earth or other such matters, which are not only useful and essential for the purpose of holding and supporting the plants in a steady and erect manner, but also for containing and conveying, at least, some portion of the food on which they live, as derived from the atmosphere or other sources, and for the regular ramification and extension of their fibrous roots, in order that it may be more certainly provided and supplied. They are beneficial too in receiving, retaining, and distributing moisture to them, as well as in receiving, reflecting, and dispersing the heat of the sun, dews, and exhalations of different kinds, by which their growth and perfection are greatly promoted. For though some plants of the aquatic kind grow in water, most of them have their roots in earth. Even marine plants, although they grow upon bare rocks or stones, are well known to be fixed to them, and that they derive their food from the seawater in or near which they exist. It has been contended by some, that plants are actually nourished by earth alone, but numerous experiments have the opinion to be erroneous, and that it is perhaps only the medium of their existence. It is well ascertained that they are capable of acquiring a great accession of weight, without almost any loss of weight of the earth in which they have been planted.

The aid and assistance of dead organized materials are, likewise, requisite in the process of vegetation and the growth of crops, as it would seem to be a part of the beautiful and orderly arrangement of Nature, that nothing should have life in vain, and that the destruction of one plant or animal should furnish food for others: consequently, that however useful air, water, light, heat, and earth may be to the growth of plants and crops, it is, if not certain, at least questionable, it is thought, whether they could ever come to perfection without the help of matter that had been formerly in an organized state. The richest soils, it is well known, are full of dead animal and vegetable matter, and there is no soil that will not produce plants or crops if a sufficient quantity of dead animal or vegetable substance be added to it. Under this denomination are comprehended all those manures which are found so useful in cultivation, more especially those to which some authors give the name of manurogenus, enriching, or nutritive. These substances and materials are greatly beneficial, by correcting the tenacity of stiff soils or lands, and the over-porosity of light ones, by producing a fermentation in them, and by affording nutritive matter to the roots of vegetables, as well as by retaining moisture in dry and expelling it in wet lands. Saline substances have been supposed too of much importance in vegetation by some, but they do not appear essential to the growth of any sort of plants except the marine; and there are many productive soils in which little or no saline matter can be discovered. Such matters may, however, be of use to vegetation, though not essential to it. That of common salt may operate upon plants as it does upon the human body, by afflicting to digest the food, without furnishing nutrition to itself. It is of use, mixed with dung, as an affixture to putrefaction, and it may act in the same way in promoting vegetation. It is serviceable too by attracting moisture, detroying vermin in the soil, and decaying and reducing the roots of any plants it may fall meet with, thus furnishing nourishment to the succeeding ones.

It is found likewise, that the culture of the earth is essentially necessary for the vegetation and growth of plants and crops to perfection, the health and vigour of both the roots and branches being thereby greatly increased. By dividing and reducing the particles of soils, the roots of the plants and crops put into them can more easily and readily penetrate and spread out in them, as well as in moderate by more expeditiously the nourishment which they contain. By proper and efficient culture too, such weeds or useless plants as are apt to rise, are extirpated and destroyed, whilst stirring the earth admits air and moisture more freely to the soils, and to those plants and crops the seeds or sots of which have been sown or put in them. It is evident likewise, that young trees thrive and succeed much better, if the soils in which they are planted have been previously ploughed in so deep a manner, as readily to admit their roots and suckers. Even after they are planted, it is supposed to be of great service to have potatoes and other such roots cultivated among the young trees in the plantations with a view to kill weeds, and loosen the soil for the free admissio of air and water. And the practice seems to be generally well received, and to have much effect in promoting vegetation in most sorts of vegetable.

The management of the farmer and gardener should, of course, and assist these views and intentions in every way as much as possible, in raising and producing plants and crops of different kinds; as by the suitable cultivation of the ground, the proper application of manure or other substances of that sort to it, the preservation of the moisture of it by different modes of cropping, and by every other practicable method in their power; as by such means the perfect vegetation and growth of them may be the better promoted and assisted. See FALLOWING Land, PULVERIZATION, SEED, &c.

It may be observed, that the substances or matters in land which have hitherto been found injurious to vegetation, are chiefly those of the metallic, sulphurous, aluminous, and altringent kinds. It has been noticed, that where mines of iron, lead, or copper, are near the surface, no plants will grow to perfection, as is well ascertained to be the case in different
different mining districts. Schilffus too, in which there is generally a great deal of iron and alum, is found to unfavourable to vegetation, that any considerable quantity of it would destroy the fertility of the richest forts of land. The noxious, corroding, and weakening effects of such substances on the tender roots of vegetables being such in some cases as to cause their decay, dissolusion, and destruction. Frequent fluirring, or the exposure of new surfaces of land to the action of the air, and the use of lime, chalk, or other dissoluing matters, will, it is supposed, correct the injurious qualities of this substance, and promote the vegetation and growth of plants and crops in such sites of land. The astringent principle or acidity in peat is often so great and so noxious to vegetation, that until any quality of that nature which may exist be subdued, though that sort of land be a perfect mas of vegetable matter, nothing but heath and other such miserable plants are capable of growing in it. Vegetation is consequently in such cases only to be allisted by breaking the parts of the land well down, and the application of earthly and other matters to it, so as to wholly destroy its astringent property, and in fact change its nature. See Soil.

It may be noticed too, that the vegetation or growth of plants and crops is frequently much injured and impeded by the various forts of vermin with which the earth as well as the air abounds. Those which inhabit the earth, it has been suppos'd, may be destroyed and got quit of by the use of fatal substances, lime, and other different substances, operations, and arts, as are seen under their several proper heads. See Grub, Mole, Slug, Worm, Vermin, &c. also Turnip.

But in regard to the myriads of those of the insect kind with which the air abounds, it is more difficult and uncertain to propoz or point out any remedy or means of prevention that may be effectual. It is not ascertained that the smell of any plant, in its natural growing state, is destructive of insects, but there are several plants which are, when dried and reduced to powder, or when burnt near to certain insects, destructive of them, as those of tobacco, hemlock, henbane, rue, wormwood, and others. Sometimes, however, vermin of this sort are occasioned by the weakness and unhealthful growth of the plants, and the poverty of the soil of the land where they grow; the best remedies in such cases are, of course, those of more perfect tillage and cultivation, so as to render them strong and healthy in their vegetation.

Vegetation, Artificial. Many of the processes and operations in chemistry afford productions, whether of salts or metals, or of whatever other substances, which very much resemble plants of one kind or other, whence they have been called metallic vegetation. But though many have been hence induced to believe, that these productions were formed in the manner of vegetables, there is not the least ground for such an opinion from reason or experiment.

M. Homberg, who has treated very accurately of the several kinds of these chemical vegetation, divides them into three different classes. Those of the first class are such as consist of a pure mafly metal, without the mixture of any foreign matter whatever. Those of the second class are composed of a diffolved metal, which, though it has concreted afterwards, yet retains a part of the menftrum in it; and the third class contains those which have no metal in them, but are merely composed of salts, oils, or earths, or of combinations of these.

All the productions of the first kind are made without the admixture of any liquor, and are merely owing to the force of fire. These are of a firm and solid texture, and may be taken out of the vessels in which they were made, without danger of breaking them. On the other hand, the vegetation of the second kind are all formed in a fluid, and are all so brittle, that they are not to be touched without breaking. Of the third kind, some are formed, or will supfiff at least, in the dry air; others are very tender, and are formed only in fluids, the very fluirring about of which destroys them. See Arbon.

Vegetation of Salts, a name given by M. Petit of the Academy of Paris, to the concretions which salts form, after solution in water, when set in the air to evaporate. These concretions always appear round the surface of the liquor, affixed to the sides of the vessel, or arising above its top, and are very different in the different salts, and in most of them very beautiful.

One of the most ready and most beautiful of all the saline vegetation, is that formed by a solution of the salts in the caput mortuum of aquafortis with common water. If a pint of water be put to half a pound of this caput mortuum, and the whole boiled together, that the salts may be diffolved, and the liquor afterwards filtered, and exposed in an earthen vessel, there will be formed, in about eight and forty hours, vegetables wholly like those from the mixture of spirit of nitre and oil of tar, except that those from the caput mortuum are more ramified and more beautiful. When the solution is exposed in a glass vessel, they form themselves on the surface into very beautiful figures of trees, shrubs, and bushes; and this not only on the surface, but on both the inside and outside of the glasses. These can be compared to no known concretion, except to the vegetation of iron, described by M. Lemery; they differ indeed in nothing from these, but that the vegetation of the metal are of a brownish colour, whereas those of the salt are white.

This impregnation succeeds best in dry weather, for in a moist season the vegetables form themselves more slowly, and are much less beautiful. Glass vessels are also essential to the vegetation being formed in their greatest beauty; they are never nearly so beautiful in earthen ones; and even in the former, the vegetables succeed much better in some sort of glasses than in others. The caput mortuum of aquafortis also is very different, from the different diffulations; and all of it does not succeed alike in this vegetation of the salt. That which looks lightest, and of the reddest colour, seems the best for this purpose. An impregnation of this caput mortuum in red-water produces no vegetables, but only forms a crust with small eminences on the sides of the vessel; and faltpetre, diffolved in the impregnation of this caput mortuum in water, produces a much more beautiful vegetation than that of faltpetre alone; but at the same time much less beautiful than that of the impregnation alone.

Salt-water, diffolved in the same impregnation, sometimes will produce beautiful vegetables, but sometimes only a rough crust. Common rough faltpetre forms no vegetables, but only crusts over the vessel; as is the case with the solutions of many of the metals in different acid menstruums. And the fame is the case in regard to many salts from which it might be natural to expect concretions of this kind. Memoirs Acad. Par. 1722.

Vegetius, Flavius Renatus, in Biography, lived in the reign of the emperor Valentinian, to whom he dedicated his treatise "De Re Militari." Although he was probably a military man, his Latin style was pure, considering the age in which he lived. The best editions of his work are the Variorum, Leyd. 1644, and Velaf. 1670. Turpin's Commentary was printed in French, Paris 1783, in 2 vols. 4to.
A work on the veterinary art, by a writer of the same name, is printed with the "Scriptores Rei Rufii." More. Gen. Biog.

VEGETO-ANIMAL Matter, in Agriculture, a term formerly applied to one of the principal constituent parts of the farina, meal, or flour of some vegetable seeds. It is found in the greatest proportion in grain, especially that of the wheat kind, existing in a state of mechanical union or mixture with mucilage or starch. On cautiously washing wheaten flour in the form of paste, in a kneading manner, under a small stream of water, until the whole of the starchy matter is removed, this substance or material is found in an elastic, ductile, tenacious flake, but incapable of being dissoved in it. It has none or scarcely any taste, readily draws out and contracts, and is of a whiteish-grey colour. When fully drawn out, it extends to the length of about twenty times its diameter before it breaks, and appears as if composed of fibres placed beside each other, according to the direction in which it has been drawn. If the force ceases, it recovers its original form by its elasticity; when dry, it is semi-transparent, and somewhat resembles glue in its colour and appearance. If it be drawn out thin when first obtained, it may be dried by exposure to the air, and in that state a polished surface, somewhat resembling that of animal membranes. If it be exposed to warmth and moisture while wet, it putsrefies like an animal substance; it crackles, swells, and burns, exactly in the manner of a feather or piece of bone. By dilatation it affords, like animal substances, alkaline water, concrete volatile alkali, and an empyreumatic oil. Its coal is very difficultly incinerated, and does not afford fixed alkali. From these facts, it is said to be obvious, that it is a substance totally different from all the others known to exist in vegetables, except albumen, which has lately been discovered in some of them, and in many of its characters resembles the fibrous part of the blood. It does not appear to exist in any considerable quantity in other farinaceous substances, such as rye, barley, buck-wheat, rice, and others of the same kind. M. Berthollet, however, thinks that it contains phosphoric acid like animal matters, and that this is the reason of the difficulty with which it is incinerated: and the younger Rouselle found a glutinous substance in the seuda of plants analogous to that of wheat. It is now commonly called gluten, and said to be of a brown colour by exposure to the air, to be very slightly soluble in water, and to differ from albumen in being infinitely less soluble in that fluid. When burnt, it affords similar products to that substance, and probably differs very little from it in composition. It is found in a great number of plants. Proul is said to have discovered it in acorns, chestnuts, horse-chestnuts, apples, quinces, barley, rye, peas, and beans; likewise in the leaves of rue, cabbages, créches, henshock, borage, fennon, in the berries of the elder, and in the grape. It appears, it is said, to be one of the most nutritive of the vegetable substances; and that wheat seems to owe its superiority to other grain, from the circumstance of its containing it in larger quantities.

In the work on the "Connection of Agriculture with Chemistry," it is said that different kinds of grain contain mucilage or starch, and this substance in different proportions, and that the same kind of grain contains them in different quantities, according to the climate, season, and soil. But that good wheat generally contains two-fifths of amalized matter, and three-fifths of starch. And that good and well-raised bread depends on flour containing a due admixture of these two substances. Hence, it is thought, by mixing the flour of different sorts of wheat, better bread may at times be produced than from one sort only. Extensive benefits, too, may arise to the proceeds of brewing, distilling, and making of vinegar, by a mixture of the different sorts of grain; and that to that of distilling, a further advantage would be derived by a mixture of different sorts with the grain, such as potatoes, parsnips, carrots, and many others, if prepared in a proper manner.

VEGETO-MINERAL Water of Goulard, in Medicine. See Water of Lead.

VEGGIANI, in Geography, a town of the island of Corfica; 12 miles W. of Bonifacio.

VEGI, or Veli, the names given by the Arabian physicians to the acorus. These writers seem never to have been acquainted with the plant itself in its growing state, but only to have known that part of it which was used in medicine in their time; but the Greeks deferred the plant in some form.

VEGIA, in Geography, a town of Africa; 45 miles W. of Tunis.

VEGIANO, a town of Naples, in Basilicata; 12 miles S. of Potenza.

VEGIO, Maffeo, in Biography, was born at Lodii in 1406, and studied at Milan and Pavia, manifesting in the former place an attachment to poetry, and in the latter directing his attention to civil jurisprudence. He obtained some honorary and lucrative appointments under the popes Martin V., Eugenius IV., and Nicholas V. Highly respected and esteemed for his genius and learning, as well as for the sanctity of his life, he died in 1458. As a Latin poet, he composed with facility, but without being distinguished for elegance or purity. He began, in his early age, with profane poetry, composing, among other works, an additional book to Virgil's Æneid; but after he entered into the priesthood, he confined himself to sacred subjects. The best of his works in this class, highly commended by Dupin, was his treatise "De Educandae Liberatorum et eorum claris moribus." His prose style is accounted elegant and polished for his time. More. Gen. Biog.

VEGLSENSKOI, in Geography, a town of Russia, in the province of Uliung, on the Wim; 72 miles N.N.E. of Varenik.

VEGLIA, an island in the gulf of Venice, near the coast of Dalmatia, about 30 miles in length, from 6 to 14 broad, and 90 in circumference, anciently called Curia and Fulfinio. In the decline of the Greek empire, it obtained the name of Buca, of which the present is a corruption. It is situated in the innermost part of the gulf of Quarnara, and separated from the continent by a small canal only. There are many harbours, but unfit for the reception of large vessels, on account of the storms by which they are agitated. Its soil is mountainous and rocky, towards the north stferile, but very fertile to the south, and the valleys are extremely fruitful. The greater part is covered with woods, which occasion a considerable trade in fire-wood. Agriculture is not so much attended to here as the culture of the vine, which produces excellent wine. The culture of silk is insignificant: the breeding of horses is more important. The breeding of sheep and goats is likewise considerable. The quarries produce a red spottet marble, not unlike that of Verona, which is much known by the name of Mandolate of Venice. This island in inhabited by 17,000 souls. N. lat. 45° 16'. E. long. 14° 42'.

VEGLIA, a fea-port town, situated on the S.W. coast of the island so called, surrounded with walls and defended by a castle, in which the governor resides. It is the seat of a bishop, suffragan of Zara, and contains about 3,600 inhabitants. N. lat. 45° 11'. E. long. 14° 38'.—Alfo, a town of Naples, in the province of Otranto; 15 miles S. of Brindisi.
VEGLIANA, a town of France, in the department of the Po, near the Little Doria, where the French obtained a victory over the Piedmontese and Spanishs, in the year 1630; 11 miles N. of Turin.

VEGLIONELLA, a town of Naples, in Basilicata; 20 miles S.S.W. of Turin.

VEGRE, a river of France, which runs into the Eure, near Yvre.

VEHAILEK, a town of Arabia, in the province of Nedsje; 70 miles S.W. of Jamana.

VEHICLE, Vehiculum, in its literal sense, signifies somewhat that carries, or bears a thing along. See Carriage, Wagon, Wheel, &c.

Thus, in Anatomy, the liver is said to be the vehicle that conveys the globules of the blood.

In Pharmacy, any liquid serving to dilute another with, or to administer it in, more agreeable to a patient, is called a vehicle.

In Painting, vehicles denote certain fluids, which are added to colours, in order to give them an unctuous confidence while used, that they may be laid on and spread properly, adhere to the grounds on which they are laid, acquire a proper degree of tenacity when dry, and defend them from being injured by accidents. The principal vehicles hitherto used are oils, water, spirit of wine, and turpentine. But as water and spirit of wine want the unctuous confidence necessary for spreading the colours, and dry away totally without leaving any glutinous substance to bind and fix such of the pigments as are of an earthy or incohering texture; gums, fixes, fugus, and other such viscid substances have been superadded to supply their defects, and render them of a due confidence and body.

VEHNE, or Veene, in Geography, a river which rises in the bishopric of Munfter, and joins the Solte, near Stickhauen.

VEIA. See Veglia.

VEICAMA, a town of Spain, in the province of Guipuzcoa; 12 miles from Tolofa.

VEIENTANA GEMMA, in Natural History, the name of a gem described by Pliny, and faid to be found in Italy; he says it was black, but surrounded with a circle of white: it was probably a stone of the camea kind.

VEJER, in Geography, a town of Spain, in the province of Seville, near the Straits of Gibraltar; 9 miles S. of Medina Sidonia.

VEI, in Ancient Geography, a town of Italy, in Etruria, S. of the Falceri, but nearer the Tiber and Rome. This was a very ancient town, and very considerable on account of the wealth and the valour of its inhabitants. Its original name was Veja, which was also, among the Olci, the name of one of those carriages in which they refted before they had houses. Its vicinity to Rome was one principal cause of its misfortunes; for the jealousy and envy of that city were excited by its opulence and prosperity. From the time of Romulus, the inhabitants of these rival towns contended. At length Veii was taken by Camillus, after a siege of ten years, in the year of Rome 356 or 357. The booty was very considerable; and part of it was lodged in the temple of the Pythian Apollo. It is a sufficient evidence of the eligible situation of Veii, that after the capture of Rome by the Gauls, it was a subject of deliberation whether this town should not be made the capital of the republic.

VEII, Velum, a piece of fluff, serving to hide or prevent the sight of any thing.

In this fenfe, we read of a large veil, or curtain, in the temple of Jerufalem, miraculously rent at the paflion of our Saviour. In the Roman churches, in time of Lent, they have veils, or curtains, over the altar, crucifix, images of the saints, &c.

Veil, in Botany, see Calyptra. These terms are now exclusively appropriated to the membranous covering of the germin in Musci and Hepaticæ, through the summum of which impregnation takes place, and which therefore must be considered as a peculiar organ, partly perhaps, but not exactly, analogous to a corolla. It is elevated with the ripening capsule in Musci, but splits irregularly, to let the fruit pass, in Hepaticæ. The reader is requested to correct two important errors of the press in the 8th column of the article Musci: line 18th, for fisks, read fibrils; line 60th, for sexual, read sexual.

Veil, Charles Marie de, in Biography, the son of a Jew at Metz, and a profelyte to the Roman Catholic religion by Boffuet, became a monk of the Augustine order, and entered among the canons-regular of St. Genevieve. Pursuing his theological studies at Angers, he took the degree of doctor in theology, and taught in the public schools. In 1679 he visited England, and abjured Popery, conforming to the English church. He had previously distinguished himself by his scriptural researches, and published Latin commentaries on the gospels of St. Matthew and St. Mark, on Joel, and the Canticles. During his stay in England he addressed a letter to Mr. Boyle, the design of which was to prove, against Father Simon, that the Scripture is the only rule of faith. In London he reprinted his commentary on the Canticles, giving a literal explanation of that book; and he also published commentaries on the twelve minor prophets, and on the Acts of the Apostles. At this time he stylized himself a prebyster of the English church, but in consequence of marrying the daughter of a Baptist, he became connected with persons of that persuasion, and preached among them in the year 1685. His death is supposed to have happened about the close of the century.

The brother of the preceding, Louis de Combridge de Veil, was also a converted Jew, and distinguished for his knowledge of Hebrew literature. He was interpreter of Oriental languages to the king of France, when he accompanied his brother to England, and joined in communion with the English church. The principal works he published were "The Jewish Catechism of Abraham Jangel;" a Latin translation, with notes, of "Maimonides Sacrificis," and also of Abarbanel's "Exordium in Leviticum." Moreri. Gen. Biog.

VEILLANE, in Geography. See Vegliana.

VELLY, or Vesley, a town of France, in the department of the Aisne, on the Aisne; 9 miles E. of Soissons.

VEIN, in Anatomy, the name of those vessels which convey back to the heart the blood carried out from it by the arteries. All the details relating to the structure of these tubes, to their arrangement in the body, and to their office in the circulating system, are considered in the articles Heart and Circulation.

The veins are naturally arranged in three divisions: viz. 1st, the general venous sytem, commencing from the capillaries all over the body, and pouring the black blood into the heart by three large trunks: 2dly, the pulmonary veins, which
which are concerned only in the minor circulation: and 3dly, the system of the vena portarum, in which the blood that has circulated through the organs of digestion is conveyed to the liver, and distributed through the sublance of that organ. The umbilical venous system of the fœtus, with its ramifications in the placenta, its trunk in the umbilical chord, and its subsequent course and distribution in the liver, is not included under either of these divisions. It belongs to the extra fetal state of existence, and is described under Embryo.

On the subject of the pulmonary veins, we have nothing to add here to what is stated in the articles Lung, Circulation, and Heart: the vena portarum is described under Liver; and the peculiarities of arrangement, belonging to the veins of any organs, are noticed in the account of those organs: so that the present article will include simply a description of the situation and course of the veins of the general system. These we shall trace, according to the course of the blood in them, from the branches to the trunks; as, on the same principle, the arteries have been traced from the trunks to the branches.

The veins of the general system may be arranged in three divisions, according to the great trunks which terminate in the right auricle; viz. the cardiac veins, those belonging to the superior, and those to the inferior vena cava.

I. The veins of the heart do not all end in one trunk: besides one large vein, there are some smaller. The great coronary vein of the heart (grande veine cardiaque pollière) runs in the groove between the left auricle and ventricle; and opens on the left of, and below the fossa ovalis and valvula Eustachii, in the right auricle. A middle coronary vein runs on the inferior flat surface of the heart, between the two ventricles, to open by a common orifice with the former, or close to it. At this opening into the auricle, a valve is placed, differing considerably in size and appearance; sometimes reflector and broad, covering the whole aperture, at other times smaller and hardly distinguishable; sometimes perforated or reticulated. See Heart.

Some smaller veins open by one or more trunks in the anterior part of the right auricle. See the plates of Senac, sur la Structure du Cœur, &c. on these veins.

II. The superior vena cava receives the veins of the head, neck, thorax, and upper extremities. The superficial veins of the head and face end for the most part in two trunks, an anterior and a posterior.

The anterior facial vein (frontal or angular) commences on the forehead, runs along the inner angle of the eye, and then pursues its course obliquely along the face from the corner of the eye to the bafs of the jawbone, which it passes at the same point with the external maxillary artery. It joins, behind the angle of the jaw, the trunk of the posterior facial vein. This anterior facial vein, which is a large and very constant trunk, receives a vast number of venous ramifications from all parts of the forehead and face, which are covered by one universal venous net-work or plexus. (See two excellent plates by Walter, Observat. Anat. 1775.) The following are enumerated as the vesel which open into it: 1. vena frontales; 2. v. suprâ orbitalis; 3, 4, v. doralis nasi, superior and inferior; 5, palpebralis inferior interna; 6, 7, alaris nasi, superior and inferior; 8, palpebralis inferior externa; 9, 10, labiales superiores; 11, 12, two from the zygomatic and levator labii superioris; 13, ramus profundus venae facialis interna, formed by the junction of, a. vena ophthalmica facialis, which, communicating by its opposite end with the cavernous sinus, receives branches from some parts in the orbit; b. nalis posterior interna; c. alveolaris superior; d. veins of the buccinator, &c.; 14, labialis media; 15, 16, vena labii inferioris, superior and inferior; 17, 18, buccalis, superior and inferior; 19, 20, two, three, or four vene mastoideae; 21, submentalœ; 22, glandulae digastrici.

The posterior facial vein is much larger than the anterior; it arises on the side of the head by branches accompanying the ramifications of the temporal artery, descends in front of the ear, through the parotid gland, behind the angle of the jaw, and unites with the former. It receives several deep temporal veins: the maxillaris inferior; several pterygoïd veins: these join its deep-leaved trunk. The superficial trunk is joined by three superficial temporal branches; articularis anterior and posterior; auriculares anteriores and profundus; transversalis faciei; auriculares posterior; several parotid veins.

The common trunk, formed by the union of the anterior and posterior facial veins, behind the angle of the jaw, terminates in the internal jugular near the point, at which the common carotid divides into the external and internal branches. It also anastomoses with the external jugular: this trunk receives the superior thyroid vein.

Veins of the Brain.—They possess no valves: their coats are much thinner than those of other veins; their capacity very much exceeds that of the arteries. Their great and most distinguishing peculiarity consists in the circumstance, that they do not accompany the arteries, either in their great or smaller branches. Their trunks are collected in the pia mater, and run either in the interval of the convolutions, or over the convexities of the latter. They pour their blood into receptacles formed in the dura mater, and called sinus; and in this respect again they differ from all other veins. The sinuses are composed, externally, of the dura mater, which holds the place of the external coat of other veins; internally, of a smooth thin membrane, corresponding to the internal membrane of the veins, and continuous with it. The cerebral veins open in large numbers into these sinuses, of various sizes, from that of a crow's-quill to a writing quill; and they enter, for the most part, very obliquely, and with an obliquity contrary to the direction of the blood in the sinuses.

These receptacles, being formed in the dura mater, which is attached to the bone, are fixed in their situations. They are generally of a triangular figure: the interior is lined by a smooth membrane, but, in many instances, it presents small transverse fibrous bridles going from side to side. They receive not only all the cerebral veins, but also those of the dura mater and the ophthalmic.

There are four large sinuses, of which the others appear to be subordinate dependencies; they are the superior longitudinal, the two lateral, and the fourth sinuses.

The superior longitudinal sinus (falciformis superior) begins near the criûta galli, where it is small; it runs from before backwards to the internal occipital tuberosity, along the middle line of the cranium, occupying the superior or convex edge of the falx, and increasing to the size of the little finger. A vertical section of it, from side to side, is exactly triangular; the base of the triangle being upwards, and corresponding to the excavation in the bone, the sides of the triangle being lateral, or turned towards the hemispheres, inclined towards each other, and united below so as to form the apex, which is downwards. Several fibrous bridles cross its cavity, which contains a greater or smaller number of the granular bodies called glandulae Pacchioni. Numerous small veins enter the sinuses from the cranium, and others from the dura mater; through the parietal foramina it receives veins from the integuments: blood may be expressed from these, when they have been lacerated by detaching
taching the skull-cap. But the principal veins it receives come from the superior or convex surface of the hemispheres. These are spread irregularly over the convexities, advance from the sides towards the middle, uniting into larger and larger trunks, and open in considerable numbers on each side of the sinus; they receive the veins from the opposed flat surfaces of the hemispheres. The anterior branches are the smallest; the middle and posterior much larger. They are directed at their termination obliquely from behind forwards, and sometimes pass for half an inch, in the substance of the coats, before they open.

The two lateral sinuses, right and left (sinus transversi), are produced by the division of the superior longitudinal at the internal occipital protuberance. They are usually of equal size, but sometimes differ in this respect, the right being often larger. They proceed along the internal transverse ridge of the occiput, at the posterior attachment of the tentorium, as far as the commencement of the petrous portion of the temporal bone, where they descend along the internal surface of the mastoid portion of that bone to the foramen lacerum in bafi crani, through which they quit the skull, taking the name of the internal jugular veins. These sinuses are as large as the termination of the superior longitudinal; and are generally uniform on the internal surface. The cavity is triangular, where it occupies the posterior attachment of the tentorium: the base of the triangle being turned backwards, and corresponding to the skull, and the two sides being inclined towards each other, and joining at an acute angle in the tentorium. Where it lies in the mastoid portion, it consists of a layer of membrane lining the bony channel, and another palling directly over it.

The lateral sinus receives veins from the back of the cerebrum and cerebellum, and some meningeal veins; large branches from the integuments of the skull through the mastoid foramina, and from the muscles of the neck through the posterior condylar holes; veins from the cavity of the tympanum, according to Soemmering; the superior and inferior petrous sinuses; and the occipital sinuses.

At the upper or concave edge of the falx, there is found the inferior longitudinal sinus (falciformis inferior). This is very small, just admitting a probe, and it opens behind into the following: it may rather be regarded as a vein than a sinus.

The fourth sinus (perpendicularis, torcular Herophilis, sinus droit) is placed at the junction of the falx and tentorium, has a triangular figure, the basis being formed by the tentorium, and the sides by two oblique layers of the falx, and exhibits internally several prominent fibrous fasciculi. In size it is about equal to a goose-quill. It receives in the front the small vein called the inferior longitudinal sinus, and a large vein, called vena magna Galeni, which brings back the blood from the choroid plexuses and inferior of the ventricles: it also receives, at its under surface, the superior veins of the cerebellum. It opens behind into the bifurcation of the superior longitudinal sinus; sometimes having a double termination.

The superior petrous sinus runs along the sharp ridge of the petrous portion, at the attachment of the tentorium, and opens into the lateral, just where that begins to descend from the tentorium. Besides some small meningeal veins, it has some from the anterior lobe of the cerebrum, and from the cerebellum.

The inferior petrous sinus is larger than the preceding, and runs in the junction of the bafal procefs of the occipital bone and the petrous portion of the temporal. Its anterior end joins the cavernous sinuses, while the posterior opens into the lateral sinuses, just before it enters the foramen lacerum. The right and left are united by one or more transverse communications on the basifal procefs. This transverse communication unites the two inferior petrous sinuses just where they communicate with the cavernous: it is placed at the anterior end of the basifal procefs, is broad, and is described by Bichat to contain the fame kind of cellular substance as the cavernous sinus.

The cavernous is the most complicated in its structure, and altogether the most remarkable of the cerebral sinuses. It occupies the side of the pphenoid bone, reaching behind to the infure which separates the end of the petrous portion from the pphenoid, and in front to the foramen lacerum: above, to the summits of the clinoid procefses, and below, to the openings through which the nerves of the fifth pair pass. The dura mater, in this situation, is divided into two layers, one of which adheres to the bone, as in other situations, and forms the internal side of the sinuses; the other, which is much thicker, forms its external side, and is part of the internal surface of the cranial cavity. In this latter layer the nerves of the third, fourth, and fifth pairs are placed, contained in sheaths of the membrane. The interval of the two layers is occupied by a soft kind of filamentous cellular substance, through which the nerve of the fifth pair and the internal carotid artery pass. The ophthalmic vein, returning the blood from the orbit, opens into this sinus, which receives also meningeal veins, and communicates with the veins on the side of the bafes cranii. It opens behind into the inferior petrous sinus. The right and left cavernous sinuses are said to communicate sometimes with each other under the pituitary gland.

The circular sinus is a small one occupying the superior aperture of the sella Turcica, and describing a circular course round the edge of the pituitary gland. It communicates on each side with the cavernous; and it receives veins from the dura mater and the pituitary gland. The anterior or posterior semicircle, or even the whole sinus, is sometimes wanting.

Occipital Sinuses.—These are very small; they begin at the sides of the foramen magnum, run backwards and upwards, and open into the lateral sinuses close to their origin. Anterior occipital sinuses are described, communicating with the inferior petrosal and the cavernous, and opening into the lateral near its exit from the head: they are not constant.

For representations of the veins and sinuses of the brain, see Haller, Icon. Anat. fascic. 1.; Vicq d'Azyr, Traité d'Anat. et Physiol. avec des pl. color. pl. 33-35-36. Santorini, Tab. Posthum. 3.

The meningeal veins, or veins of the dura mater, receiving innumerable ramifications from the substance of the cranial, form trunks, which accompany the arteries, and often on each side, being lodged with them in bony channels of the skull; these veins open into the sinuses, particularly towards the basis of the skull, and are said to communicate with the pterygoid veins.

Veins of the Eye.—(See Walter, Epitola Anatomica de Venis Oculi.)—The vena ophthalmica cerebral begins about the internal canthus, communicating with the ophthalmica facialis, goes outwards and downwards behind the globe, and ends in the cavernous sinus. The following veins enter it; viz. vena nasalis, ethmoidalis anterior, infraorbitalis, ciliaris interna, ciliaris superior, lacrymalis, ciliaris petrosus, ciliares longae, ethmoida posterior, centralis retina. The arrangement and distribution of these vessels in the eye are described under Eye.

There are free communications between the external and internal veins of the head, in various situations, which have been already noticed; viz. at the parietal, the mastoid, and the
the posterior condyloid foramina. The veins of the orbit also constitute a communication between these two sets of veins, as they are connected on one side with the facial veins, and on the other with the cavernous sinuses.

It appears from the preceding description, that all the sinuses end, either medially or immediately, in the right and left frontal, and consequently that all the blood conveyed to the brain is returned by these veins. Having passed the foramen lacerum, the tube is called the internal jugular vein; it swells out into a dilatation received into the fossa jugularis of the temporal bone, descends perpendicularly along the neck, in company with, and on the outside of the internal carotid, and, afterwards, of the common carotid artery, and of the par vagum, with which parts it is enclosed in a common cellular sheath. Just behind the anterior extremity of the first rib it ends, by joining at a right angle the subclavian vein. The internal jugular is a very large vein; when distended in the living subject, or by injection after death, it is nearly as large as the thumb. It receives the following veins, viz. - the pharyngeal, the lingual, the common trunk formed by the union of the anterior and posterior facial, the superior and middle thyroid.

The external or superficial jugular vein is formed by two or three principal trunks, and by smaller branches, which form a kind of venous plexus on the side of the neck, covered by the skin and by the external jugular vein*. These trunks are the occipitalis superficialis, which commences, in company with the occipital artery, from the integuments of the back of the head, and receives branches from the muscles of the neck; the internal jugular vein, which accompanies the artery of the same name; the deep-seated veins of the cervical muscles; the subclavian vein towards the front of the neck; and smaller twigs from the external and lymphatic glands. The trunk terminates at the angle of union of the internal jugular and subclavian, or in the subclavian itself.

For the veins of the neck, see Walter's plates in the Observat. Anat. already quoted.

Veins of the Upper Extremities.—The arteries are everywhere accompanied by corresponding veins, which lie close to them, and are generally double, one on each side. These it is not necessary to describe. In addition to these, which may be called the deep-seated, there is a cutaneous set of veins in the fingers, the subclavian, and arm, forming large trunks placed merely under the skin, not accompanied by any arteries. Both the deep-seated and cutaneous veins pierce the skin. The superficial veins of the arm lie between the skin and the fascia, and form a venous net-work, composed of larger and smaller branches, over the whole limb. There is great variety in the size and arrangement of the trunks, which, however, are regular and constant in the arm. The digital veins run in trunks at the backs of the fingers, completely covering them after successful injection; they form a plexus (dorsalis manus) on the back of the hand, from which a large trunk (subcapitalis interna, or ulnae superficialis) or two, with smaller ramifications, run in the course of the ulna to the elbow. It passes over the tendon of the biceps, and assumes the name of basilic vein; it ascends along the arm, on the inner edge of that muscle, in company with the brachial vessels, and enters the axilla, where it ends in the axillary vein.

A large vein on the back of the hand, arising from the little finger, was called by the ancients faucella. A venous plexus arises from the thumb, of which the largest branch is sometimes called cephalica pollicis: this plexus, containing one or two larger trunks, (radialis externa, or cephalica minor,) is continued along the radial side of the fore-arm to the bend of the elbow, where it divides into two branches; the largest, under the name of median vein, passes obliquely in front of the joint to join the basilic vein; the other is called the cephalic, (cephalica major,) ascends on the outer edge of the biceps, runs in the cellular interval between the pectoralis major and deltoid to the edge of the scapula, then dips under the bone, and ends in the axillary vein.

There is considerable variety in the median vein, which is sometimes merely an oblique communication between the basilic and cephalic; in other instances, a large branch comes from the middle of the forearm, (mediana communis,) and divides at the elbow into two trunks, which separate like the branches of the letter V, and join, one the basilic, and one the cephalic. These branches are then called mediana subclavia, and mediana cephalica. There is always a large communication at the elbow, between this median vein and the radial and ulnar veins.

The axillary trunk, in which all the veins of the upper extremity end, is placed in front of its corresponding artery, on the side and anterior part of the chest; it passes in front of the anterior scalenus muscle, and ends at the clavicular extremity of the first rib, by joining the internal jugular at a right angle. In this angle the thoracic duct ends behind, on the left side; and the minor trunk in front, on the right side.

For representations of the veins of the upper extremity, see Camper, Demonstrationes Anatomico-Pathologicae, lib. i. Klint de Nervis Brachi.

The axillary trunk receives the superior and inferior thoracic veins, the external and internal scapular, the dorso-lumbar, the vertebral, and the superior intercoastal vein.

The trunk of the latter accompanies its corresponding artery in the transversus processus of the cervical vertebrae, commencing about the foramen magnum, and receiving numerous branches, of which the most remarkable are from a large plexus of veins lying close on the vertebrae before and behind, and connected with the transversus colli, the occipital, and the internal jugular veins, from the sinuses of the medulla spinalis in the neck, (circular venosi cervicales medullae spinalis,) and communicating with the cerebral veins, at the foramen magnum. The vertebral and superior intercostal veins end in that part of the trunk called subclavian.

The right superior intercostal is sometimes deficient; that is, the veins of the two or three superior intercostal intervals, instead of uniting into a separate trunk, join the vena azygos. The left is always a considerable vein, formed by the veins belonging to the five or six superior intervals, which join into a trunk ascending on the left side of the vertebral column, receiving the left bronchial vein, and some other small branches.

The subclavian vein, having received the internal jugular, descends on the right side almost perpendicularly, and on the right of the arteria innomina is, receives the internal mammary vein, and very soon receives the left subclavian at a right angle. It now takes the name of superior or descending vena cava, continues its course in the same direction, receives the vena azygos from behind, and after a farther perpendicular descent of about an inch, having penetrated the pericardium, terminates in the right auricle.

The left subclavian vein crosses the chest, immediately behind the upper edge of the first bone of the sternum, and in front of the trachea and primary branches of the aortic
aortic arch, proceeding transversely from left to right, and joining the right subclavian above the pericardium, as already described. It receives in this course the left internal mammary, the mediastinal, azygos, superior pericardiac, and inferior thyroid veins.

The internal mammary vein accompanies the artery. The azygos veins are connected with the mediastinal, pericardiac, &c. They end either in the subclavian, internal mammary, bronchial, superior intercostal, or thyroid.

The superior and posterior pericardiac veins generally end in the subclavian; but they may terminate in the bronchial or internal mammary. The vein accompanying the left phrenic nerve ends in the bronchial; on the right side, in the internal mammary.

The vena azygos returns the blood from the piaeties of the chest, except in so far as the superior intercostal veins are concerned, which, as we have already described, join the subclavian. This vein connects the superior and inferior veins of the body: for its inferior ramifications anatomico with the lumbar or other abdominal veins. Hence, where the inferior cava has been obstructed, the blood has found its way through the vena azygos into the superior.

The minute origins of the vena azygos on the right side of the body are connected with the vena cava, the lumbar, or the renal veins. The trunk, at this part small, enters the chest, either with the aorta, or through an interval in the right crus of the diaphragm. It ascends on the right side of the vertebral column, in front of the right intercostal arteries, covered by the pleura, with the trunk of the aorta on its left, and the thoracic duct in the cellular substance between it and that artery, receiving the intercostal veins, and increasing in size. About the third dorsal vertebra it quits the spine, passing forwards over the right bronchus and pulmonary artery, receiving the right bronchial and some esophageal veins, and, at a considerable size, and opens into the back of the superior vena cava.

The intercostal veins, which it receives in its course, accompany the arteries of the same name, and return the blood from the intercostal muscles, and those of the back, from the medulla spinalis, from the vertebrae, pleura, integuments, &c.

About the seventh or eighth rib, the vena azygos receives a large branch from the left side, called hemi-azygos. This begins by roots, which communicate with the abdominal veins, from a trunk entering the chest through the diaphragm, ascending on the left side of the chest, receiving four, five, or more left inferior intercostal veins, and then crooking to the right side, to join the trunk. Sometimes the hemi-azygos joins the common trunk by two or three branches; sometimes it is not formed, and the left intercostals proceed straight to the right side. See Wrisberg, Observat. Anat. de Vena azygos duplici, aliquique hujus vena varietatibus. Gotting. 1778.

111. The inferior Vena Cava.—The veins of the lower extremities of the pelvis, and the abdomen, terminate in this trunk.

The veins of the lower, like those of the upper extremity, consist of a deep-felt set accompanying the arteries, and therefore not requiring a separate description; and a superficial order, covered only by the skin, and intervening between it and the fascia. The femoral vein is the common channel for the blood of both these systems of veins.

The superficial veins of the leg compose two principal trunks, called saphenae: there is indeed, as in the upper limb, a plexus covering nearly the whole of the foot and leg, of which the different branches every where communicate.

The saphena externa or minor arises from the venous plexus of the sole and back of the foot towards the outer edge; it runs below and behind the outer ankle, then rises over the calf, and having frequently communicated with the deep-seated veins, terminates in the trunk of the popliteal.

The saphena externa or major is made up by the veins coming from the backs of the toes, and from the inner side of the foot, which form a considerable trunk, ascending in front of the internal malleolus, on the infide of the leg, knee, and thigh, communicating frequently with the deep-seated veins, and ending in the trunk of the femoral, about an inch below the crural arch. Just before its termination, it receives some veins from the external organs of generation (pudicis externa); and a considerable trunk, which descends from the integuments of the abdomen.

The femoral vein passes under the crural arch, on the outside of the corresponding artery, and continues in company with the artery, under the name of the external iliac, along the side of the psoas magnus, until it meets with and joins the internal iliac or hypogastric vein from the pelvis, at the sacro-iliac symphyses, or the point where the common iliac artery bifurcates into its external and internal branches. Immediately above the crural arch, the external iliac receives the epigastric and circumflex iliac veins.

The internal iliac or hypogastric vein is made up by the union of venous trunks, corresponding to the various arteries which are given off from the internal iliac artery. These veins accompany their respective arteries; but they are remarkable for forming thick and intricate plexuses, which surround the prostate, vesicle feminales, neck, and fundus of the bladder, urethra and vagina, and rectum.

A large vein runs along the back of the penis, in its middle, between the two artery dorifae, and returns the blood from the glans, corpus spongiosum, bulb, and corpora cavernosa. It passes under the arch of the pubes, and divides into a right and left branch, which run into the plexus about the prostate and vesicles feminales.

The superficial veins of the penis and scrotum find their way under the arch of the pubes, communicating with the internal pudic vessels, and end in the plexuses about the neck of the bladder.

They are united on the outside with branches of the spermatic vein, and of the femoral. The prostatic and vesicle feminales, the lateral and inferior parts of the bladder, are covered by numerous ramifications of a dense plexus, from which the trunks of the vesical veins convey the blood to the hypogastric.

The veins in the labia are numerous, and communicate frequently: these and the veins of the clitoris pass under the arch of the pubes; the front of the vagina and urethra are covered by a thick plexus, which is the common termination of the external and internal pudic vessels. These plexuses envelope the sides of the vagina, the anterior, lateral, and inferior parts of the bladder, and end in the vesical veins.

The external hemorrhoidal veins end in the pudendal; the middle occupying a space of three or four inches, and united with the plexuses already mentioned, join the hypogastric. These latter are interpolated between the internal hemorrhoidal, which joins the vena portarum, and the external, from which the hemorrhoidal flux proceeds.

Large veins proceed from the vagina and uterus to the internal iliac: there are also the lateral facial veins, corresponding in number to the facial foramina, out of which they proceed, and united with the middle facial vein. The other vessels contributing to the hypogastric vein are, the obturator, ileo-lumbar.

The primary or common iliacs, formed by the junction,
at nearly right angles, of the externa and internal, are very considerable venous trunks, differing slightly on the right and left sides of the body. The right is much the shorter, and proceeds obliquely behind, and rather above its corresponding artery. The left, placed behind and below the left common iliac artery, proceeds obliquely upwards and towards the right, across the front and upper part of the facrum; then goes between the fifth lumbar vertebra and the right common iliac artery, to join its corresponding vein, at an acute but open angle, on the right side of the vertebral column, at the interval between the fourth and fifth lumbar vertebra; forming by this union the great trunk of the inferior or ascending vena cava.

One or two lumbar veins sometimes join the common iliac. The facra media, a small vein, terminates, either at the angle of union, or in the left common iliac.

The inferior vena cava lies at its origin, close to the aorta, on its right, and on the right side of the vertebral column: it ascends in the same relative position, first connected to the spine, then to the right crus of the diaphragm, but more and more distant from the aorta, as it rises higher in the body. It leaves the vertebral column towards the upper part of the abdomen, and enters a deep fissure in the posterior or thick edge of the liver, which covers two-thirds, and sometimes the whole vein. From the joins upwards the size of the trunk is considerably increased; it will easily admit a large thumb. Quitting the liver, it penetrates the tendon of the diaphragm (see DIAPHRAGM), and immediately opens into the right auricle of the heart. (See HEART.) In its passage it receives the following veins.

1. The facra media has already been mentioned.
2. The lumbar veins correspond to the arteries of the same name, and return the blood from the parts supplied by those vessels. They form about four trunks on each side, which end in the lateral and posterior part of the inferior cava.
3. The spermatic veins. They come from the testicles, in the male subject, from the uterus and ovaria in the female; receive various branches from the ureter (ureterica), fat of the kidney (adiposum), &c., and communicate with veins in the mesentery and mesocolon; form first a considerable plexus, with several trunks communicating together, and afterwards a single vein, which ends in the front of the vena cava on the right side, and in the renal vein on the left.
4. Renal or emunctory veins. Of these large trunks, the right is much shorter than the left, on account of the relative position of the vena cava and the kidneys. The latter crosses the vertebral column in front of the aorta. There are rarely more than one on each side.
5. Capillary veins. These often end in the renal, particularly on the left side, otherwise they terminate in the cava.
6. Hepatic veins. They are numerous, and of different sizes. Usually there are from three to five large ones, and several smaller. They return the blood of the vena portarum and that of the hepatic artery.
7. Inferior diaphragmatic veins; accompanying the arteries, and ending either in the cava, or in an hepatic vein. Soemmerring states that some diaphragmatic veins join the vena portarum.

Besides the works to which we have referred in the course of this article, for plates illustrating particular veins, we may refer in general to the Fasciculi of Haller, to the plates of the veins in Loder's collection, and to Mayer's Anatomische Beschreibung der Blutgefäße des menschlichen Körpers; mit kupfern, 1788, 8vo. See also Walter Angiologisches Handbuch, 1779. Soemmerring, De Corporis Humani Fabrica, t. 5. Bichat's Anatomie Descriptive, t. 4.

Veins, Dissection of. Veins (says Mr. Hodgson) are liable to all those morbid changes which are common to soft parts in general; but the membranous lining of these vessels is peculiarily susceptible of inflammation. When a vein is wounded, the inflammation, which is the effect of the injury, sometimes extends along the lining of the vessel into the principal venous trunks, and, in some instances, even to the membrane which lines the cavities of the heart. This inflammation sometimes produces an effusion of coagulating lymph, by which the opposite sides of the vein are united so as to obliterate the tube. In this manner, a great extent of the vein is occasionally converted into a solid cord. In some instances, the secretion of pus into the cavity of the vein is the consequence of inflammation of the membranous lining of veins; under these circumstances, the matter is either mixed with the circulating blood, or the inflammation, having produced adhesion of the sides of the vessel at certain intervals, boundaries are formed to the collections of pus, which in this manner form a chain of abscesses in the course of the vein.

When the inflammation of veins is not very extensive, its symptoms are the same as those of local inflammation in general; but when the inflammation extends into the principal venous trunks, and pus is secreted into the vessel, it is accompanied with a high degree of constitutional irritation, and with symptoms which bear a striking resemblance to those of typhus fever. See Hodgson's Treatise on the Dissection of Arteries and Veins, p. 511, 512.

In the first volume of the Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, Mr. Hunter has published an extremely interesting paper on the subject of inflammation of veins, and he has particularly adverted to that common case, an inflamed arm after bleeding. By some, he observes, this complaint has been imputed to the wounding of a tendon; by some, to the injury of a nerve; and by others it has been ascribed to a bad constitution.

Mr. Hunter expresses his doubts of the accuracy of these opinions, and he remarks, that the manner in which these fore arms come on, plainly proves that they arise from the wound not healing by the first intention; for, in most cases, the external wound first fester or inflames, and then suppurates or ulcerates, the cavity of the vein becoming subfequently impervious. In some instances, this suppuration is only superficial, the vein and parts below having united. In other examples, the skin appears to be united, but not close to the vein, so that a small ab- seses forms between the vein and the integuments. This bursts and discharges a thin watery fluid, and no further mischief happens. When, however, this imperfection of union is continued on to the cavity of the vein, this vessel inflames both upwards and downwards, frequently to a considerable extent, and the surrounding parts join in the inflammation.

We find, says Mr. Hunter, all these variations in different cases. Sometimes the difcuse goes no further than an inflammation near the orifice of the vein, and the case often ends in resolution. At other times, the inflammation is carried further, but suppuration is prevented by the adhesive inflammation taking place in the affected portion of the vein, and, in such cases, the veins may be plainly felt, like hard cords, after the surrounding tumefaction has subsided. But this salutary effect is not always produced, and suppuration in the vessel is the consequence, but often in so limited a degree, that only a small abscess forms in the cavity of the vein, near the puncture. The confinement of the matter in this part of the vein, arises from adhesions in the vessel, a little above and below the orifice. But, in many cases,
adhesions do not occur, and then the inflammation and suppuration are not confined to the vicinity of the wound. On the contrary, an abscess is frequently produced, occupying a considerable length of the vein in both directions; and, says Mr. Hunter, we often have more than one abscess; nay, sometimes there is a series of them, generally in the direction towards the heart; but not always in this course; for, occasionally, these abscesses are observed between the orifice in the vein and the extreme part of the limb.

In consequence of a wound in the foot, Mr. Hunter saw the vena saphena inflamed all up the leg and thigh, nearly as high as the groin; and he was obliged to open a chain of abscesses, which reached nearly the whole course of the vessel.

In cases in which the inflammation had been violent, and in which the opportunity of examination was afforded, Mr. Hunter found the inflammation at some distance from this violence in the adhering state; in some places, the sides of the vein were adhering; and, in others, the inner surface of the veins was covered with coagulated lymph. When different abscesses had formed, he always found, that the spaces of the vein between them had united by the adhesive inflammation, and it is this union which circumferibes such abscesses.

In examining the arm of a man who died at St. George's hospital, Mr. Hunter found the veins, both above and below the orifice, united in many places by the adhesive inflammation. He also found in many parts of the veins the commencement of suppuration, without ulceration having actually begun; while, in several other places, ulceration had occurred, and destroyed the surface of the vessel next the skin, a circumferibed abscess being produced. The vein near the axilla was in a state of suppuration, and as no adhesions were formed beyond the part affected, Mr. Hunter conceived that the matter had passed freely into the circulation, and most probably been the occasion of the man's decease.

When larger abscesses had come on than those arising from the ulceration of the wound of the lancet, Mr. Hunter always found that the vein was afterwards obliterated, having united and healed up as any other cavity does, so that the patient could never be bled in the same vein again.

Inflammation of a vein is a common effect after bleeding horses, which is to be ascribed to the carelessness and rough manner of closing the puncture with a pin. Mr. Hunter has seen the jugular veins of horses inflamed through their whole course, the swelling extending to all the side of the head, and the inflammation reaching even to the chest. In these cases there is always an abscess formed at the wound, and often several along the vein, as in the human subject; and whenever the complaint is carried as far as this stage, the vein is rendered for ever afterwards impervious. Many horses die of this disease; but what is the particular circumstance which occasions their death, Mr. Hunter was not able to determine. It may (says he) either be that the inflammation extends itself to the heart, or that the matter secreted from the inside of the vein passes along that tube in considerable quantity to the heart, and mixes with the blood.

Although the operation of venesection, which is the most frequent cause of this complaint, is to appearance trifling, yet, as it is often of very serious consequence, both to the life of the patient and the character of the surgeon, the operator should use the utmost care to prevent an evil of such magnitude. He should be particularly attentive to the mode of closing the wound and binding up the arm. This is to be done by bringing the two sides of the wound together, in order that they may unite by the first intention. To accomplish this, let the surgeon, with the thumb of that hand which holds the arm, push the skin towards the orifice, while he draws it on the other side to the same point with the comprefs, which is then to be immediately applied. The comprefs should be broad, so as to keep the skin better together; and thick, in order that the compression may be more certain. Mr. Hunter preferred a comprefs of linen, or lint, to sticking-plaster. He very properly thought, that the blood which dried over the orifice was a more natural and effectual bond of union than any other application. This conclusion, he observes, is drawn from practice; and he had seen more fore arms, in consequence of bleeding, where the puncture had been dressed with plasters, than under other circumstances.

When inflammation takes place beyond the orifice, the surgeon should endeavour to promote adhesion of the inflamed sides of the vessel by means of compression. If it be suspected that suppuration has happened, the prefrure should be applied just above the suppuration, with a view of producing an obliteration of the vessel in that situation. (See Trans. of a Society for the Improvement of Med. and Chir. Knowledge, vol. i. p. 19, &c.) As Mr. Hodgson observes, the treatment of the inflammation, when only the punctured vein is affected, should be the same as that of local inflammation in general; namely, the application of leeches, the use of evaporating washes, purgatives, and low diet. Although the constitutional irritation, which takes place in extensive inflammation of veins, is attended with more debility than usually accompanies acute inflammation, yet the case can hardly be relieved without recourse to copious bleedings, and the usual antiphlogistic remedies.

For additional information on the foregoing subjects, we refer to Mr. Hodgson's excellent Treatise on the Diseases of Arteries and Veins, a publication which reflects the highest credit on its intelligent author. Some other affections of the veins are noticed in distinct articles of this Cyclopaedia. See CIRCOLECCE, HEMORRHIDOS, VARICOCELLE, VARICOSE VENAE, VARIX, &c.

Veins, Method of opening, for the purpose of taking away blood. See BLEEDING.

Vein, in Botany and Vegetable Physiology, vena, is a term used for all those-semblances of tubes, through which the sap of a plant is transmitted along the leaves, and by some of which also the secrete fluids must be returned into the bark and wood, for the increase of both. Hence Hedwig, for the sake of precision, has invented the term ductusfuscius, a cluster of ducts, for the ribs of the foliage in Molluscs; but we see no improvement in this phraseology. The larger, primary, or more direct, semblances of vessels have obtained the name of ribs, capul, or nerves, nervi; but the limits between these and veins are not always very certain. Large transverse veins, as well as the great longitudinal ones, are often called ribs or nerves, especially if they feed off finer and more complex ramifications, interbranching with each other like net-work, to which the name of veins is evidently more suitable. We could wish to apply the term refia to the great central rib, and nervi to the lateral ones, whether longitudinal or transverse, but this has not been adopted with any regularity. See COSTA and LEAF.

Veins are also found copiously in the petals of flowers, and are exactly analogous to the veins, ribs, or nerves of leaves, except being generally more pellicid and homogeneous. When the petals undergo any changes of colour, in their progressive flages of growth, the veins partake remarkably of such changes, and most of the iris is not.

Ribs, rather
VEIN.

rather than veins, are most apparent in the calyx of many plants.

Veins, Metallic and Mineral, in Geology, are fissures intersecting rocks or strata, filled more or less completely with mineral or metallic matter, different from the substance of the rock. When veins are seen on the surface intersecting or traversing a mountain, they have been supposed to resemkle the veins of animals; but the resemblance is only superficial, for veins are not tubular, except in a few instances; but their thickness is small, compared with their length and depth.

Metallic veins are the principal repositories of most of the metals, except iron and manganese, which occur more frequently and abundantly in beds than in veins. The thickness of metallic veins varies from a few inches to several feet; the same vein varies also in thickness in different parts of its course, sometimes contracting to a narrow string of ore, and then expanding again to the width of several yards. The depth to which they descend is unknown, for we believe no instance has occurred of a considerable vein being worked out in depth, though it may sink too deep to render the operation of the miner profitable; or it may branch off in a number of strings, which are too much intermixed with the rock to be worked to advantage. In caves where the metallic ores have disappeared at considerable depths, the veins are still continued, though they are filled exclusively with the mineral matter or vein-stone which accompanied the ore in the upper part of the rock. Some veins appear to grow wider, and others to contract as they descend. The direction of veins downwards inclines more or less from the perpendicular; but they sometimes run for a certain distance parallel with the dip of the beds or strata in a mountain, and then strike down through the lower beds.

The length of metallic veins has rarely, if ever, been accurately determined; they have frequently been traced several miles, but their further progress has been concealed by the intervention of valleys, rivers, or accumulations of land and alluvial deposits. Some of the metallic veins in South America have been traced to the distance of eighty miles. Large veins generally take a nearly direct line through a country, except where they are turned aside by cross veins, or what are called in Cornwall cross courses: it is also remarkable, that the metallic veins in England generally run nearly east and west, and the cross courses north and south. To what cause this is owing we are perfectly ignorant. Large metallic veins frequently feed off smaller veins, or strings of ore, from their sides, which penetrate the rock to a considerable distance on each side of the large vein. Veins are seldom entirely filled with ore, but sometimes it extends in a compact mass from one side to another. More frequently, the ore is intermixed with mineral matter called vein-stone, matrix or gangue; this, according to the rock which it intersects, will be either calcareous spar, fluor spar, barites or quartz. The vein-stone and the ore are frequently arranged over each other, lining the sides of the vein with alternate layers of metallic and mineral matter, and filling up the whole vein. In the mines of Cornwall, the ores of copper and tin commonly occur in detached masses, which are called bunches of ore; and the other parts of the vein, being unproductive, are called deads.

The vein is generally separated from the rock which it intersects by a thin layer of mineral matter distinct from the vein, and from the rock itself, and also by a thin lining of clay. Sometimes there are large cavities in veins called drys, which are generally lined with crystals. In other instances the vein divides, inclosing a piece of rock, which is called the rider; but it is observed, that the included mass, or rider, differs in its quality from that of the rock through which the vein passes.

The superficial part of a vein generally contains the ore in a decomposing state; and it frequently happens that the ores in the upper and lower part of the vein are different: thus in Cornwall, blende, or the sulphuret of zinc, often occupies the uppermost part of the vein, to which succeeds tin-stone, and at a greater depth, copper pyrites. See Zinc, Tin-Stone, and Copper.

When Mr. Pryce wrote his "Mineralogia Cornubiensis," the mines of Cornwall had not been worked to a great depth, for he says the richest state of a mine for copper was from eighty to one hundred yards deep, and for tin, from forty to one hundred and twenty yards. This account by no means corresponds with the present state of the Cornish mines. The Dolecoth copper-mine, near Redruth, is worked to the depth of four hundred and fifty-six yards, and is very productive at that depth.

Veins generally decline from the perpendicular, and descend into the earth obliquely. The sides, or, as they are called, the walls or cheeks of the vein, are differently denominated, the upper side being called the hanging-side, the upper cheek, or hanger; and the under side, the bolding-side, the down-side, or the ledger. The veins we have been describing are called rake veins in some parts of England, and in Cornwall, they are denominated lodes; which fee. These metallic veins have commonly the same direction, or nearly so, in the same district, and the veins which cross them are generally unproductive, or contain metallic ores of a different kind. They are called cross courses, or north and south veins.

Metalliferous rake veins intersect most of the mountains called primary, such as granite, gneiss, and mica-slate. (See Granite, &c.) But they are more abundant in slate-rocks than in rocks of granite or porphyry. (See Granite, Slate, and Porphyry.) They also intersect the rocks of transition and mountain lime-stone, which rest upon slate, or alternate with it; but they rarely rise into the secondary strata which contain coal. This fact seems to prove that veins were formed prior to the deposition of the upper secondary strata. When a metallic vein in its descent passes through different kinds of rock, it is frequently observed that the products of the vein vary in each bed; and when it passes through regularly stratified beds of the same rock, there are particular strata in which the veins are always found most productive, and these in the north of England are called bearing strata. If the nature of the rock seems to have produced a change in the quality of the ore, it is no less remarkable that the rock itself is also frequently changed or decomposed in the immediate vicinity of a vein. This change is more apparent in some rocks than in others, particularly in granite, schistus, gneiss, mica-slate, argillaceous schistus, or slate, and porphyry. In such instances, according to Werner, it is only one of the component parts of the rock that is decomposed, either the felspar, the hornblende, or the mica, but never the quartz. This change sometimes extends to a considerable distance on each side of the vein, even to a fathom or more; it extends farther in some places than in others, and is most general in those parts where the vein contains sulphur. Sometimes this change in the rock may be perceived to far, that it serves as a guide to the miner; and in following a sterile vein, when he comes to a place where the rock is decomposed, he concludes that the metal ore will soon be found. In Cornwall, the felspar is frequently changed in the vicinity of a vein, and tin-stone is sometimes disseminated through the rock to some distance on each side of it.

The
The crofs courses or veins which intersect the metalliferous
veins, frequently occasion a considerable derangement in the
position of metalliferous veins, and, what is still more
remarkable, occasion a change in the quantity or quality of
their contents. When a vein is cut through by another,
either in its line of bearing along a country, or crofses it by
declining in a different direction, the vein which is cut
through is suppozed to be of more ancient formation than
the vein which crofses and cuts through it; but it may be
doubted, from various circumstances, whether many of these
veins were not formed at the same time with the rock itself,
or were fissures passing through the rock in different direc-
tions, into which the various metallic subfances were re-
created, during its condifiliation. To form a more diftinct
idea of the ftricture of a vein and its interfection by crofs
courses, we refer to Plate IV. Geology. Fig. 4. a a repre-
sent a rake-vein defending obliquely; b b, the rock; c c,
the walls or fhecks of the vein; d, an interpofig piece of
rock, called the rider; e e, e, the division of the vein into
numerous small veins or frings of ore. If the fpace at d,
which is suppozed to be filled with rock, were empty, or
filled with water, it would constitute what is called a druffe;
and it is in these cavities or druffes that all the moft beaufiful
and regular crystallizations of the mine occur. Fig. 5. re-
prefents the fection of a rock containing a metallic vein cut
through, and displaced by crofs courses or veins of another
metal; a a is a vein which appears to have been once con-
tinuous, and contains tin; b b, b b, reprefent fifferent veins of
copper, which cut through the former, and have upheaved
the lower part, and brought them nearer the furface. In
Plate II. Geology. fig. 10. reprefents the ground plan or
horizontal fection of a plot of ground traversed by a vein and
a crofs course; E.W. reprefent the eai£ and weft fides of
the ground. It is in this direction the vein a a pafses, but
it is cut through by the crofs vein b b, which has carried the
feftern fide of the vein and the ground along with it confi-
derable to the north of its original position. Such a ftructure
and removal of the vein can only be conceived to have taken
place by a lateral or horizontal motion of a portion of the
ground. Such a motion has been frequently observed during
violent earthquakes. For though the ground is heaved up-
wards, the greater refiftance which certain parts offer to this
motion must occafion a lateral prefure on other parts of the
earth's furface, and to fuch a prefure we muft also refer the
remarkable contortions of the coal flara near Valenciennes.

See Plate II. fig. 9.

Metallic veins frequently occafion a displacement of the
flara when they pass through regularly stratified rocks;
and it is obferved, that when this displacement is con-
siderable, so as to bring a bed of lime-flone on the
fame fide with a bed of fland-flone or flake, the vein
is never fo productive as when the oppofite fides or walls
of the vein are in the fame kind of rock. See Plate II.
Geology. fig. 8. where the different flara a, b, c, d, e, f, g,
reprefent different flara on each fide of a vein or fault.
If d, d, are suppozed to reprefent parts of a bed of lime-
flone broken by the vein, and g, g a bed of fland-flone
below the lime-flone, but brought on the fame fide with it
by the upheaving of the flara,—in that part of the
vein where the lime-flone, d, and the fland-flone, g, form
the walls oppofite to each other, the vein will be unproductive,
though in other parts of the flara, when the vein paffes
through the fame bed of lime-flone, on each fide of it, at
the fame fide, it will be remarkably productive. These
facts may be commonly obferved in the mining flara of the
ueftern parts of Northumberfand and Durham, where
the flara confift of different beds of mountain lime-flone,
fand-flone, and flake. See Strata, under which article
the fuccedion of the different beds is enumerated.

As crofs veins generally difplace and injure the quality of
veins, on the contrary, when eai£ and weft veins in a diftrict
meet, by a flight variation in their direcHon or dip, the part
where they join is frequently very rich in ore; and where
a number of metallic veins crofs each other at the fame
place, they frequently produce a large irregular conical mass
of ore of vallt extent, from which the different veins diverge,
like radii from a common centre. The main ſtart of fuch
a vein, which Mr. Williams, in his Mineral Kingdom, calls an
accumulated vein, "refembles," he says, "the infide of a
flafts-house; and the vallt capacity of this vein is frequent-
y flored with a rich body of metallic ore, often imbedded
in foft mineral fols; but the veins and branches which join
and diverge refemble rake-veins, or perpendicular mineral
fifures. When the ore is worked out of an accumulated
vein, it exhibits a frightful gulf, fometimes fifty or sixty
feet wide below, and is often worked down to a great depth
from the furface." A number of thefe accumulated veins
have been worked at Pike-Law, in the county of Durham.
Crofs courses fometimes contain ore to a fmall diftance from
their junction with metallic veins, and in other fituations
they become fo rich as to be worked with advantage. The
Botallock mine, on the sea-coaft near St. Juft, in Cornwall,
offers a striking illuftration of this, though we believe its
ftructure has not been generally known or undertood. The
vein which is worked is a north and south vein, varying in
width from nine to twelve feet, and extending under the sea.
The vein-flone is quartz, with a small quantity of fluor fpar.
It is found to contain ore of copper and tin only in those
parts where the eai£ and weft veins enter it, and for thirty
or forty fathoms on each fide of the junction. This mine
produces the richest ore of copper in Cornwall, the grey
fulpheur yielding twenty per cent. of this metal. It is de-
serving notice, that the metalliferous veins which enter this
lode on the eai£ fide and render it producfive, have never
been found on the weft fide, fo that they appear to termi-
nate in it. The rock near the great north and south vein is
a foft killas or flate, but beyond this it is a very indurated
flinty flate. This vein may properly be considered as a crofs
course, rendered rich in ore in various parts by a number of
small veins which fall into it, like brooks into a large river
where they are loft. The fition of this mine is truly re-
markable, at the foot of a precipitous cliff that overhangs
the Atlantic ocean. If ever a spot feemed to bid defiance
to the efforts of the miner, it was this. At the very com-
 mencement of his labours, he was required to lower an im-
meas furne-engine down a precipice of more than two
hundred feet, with a view of extending his operations under
the bed of the sea, where the workings are at preient con-
tinued for seventy fathoms in length and eighty-five fathoms
in depth. In these caverns of darknes, many human beings
for a small pittance, and that even of an uncertain amount,
are contantly digging for ore, regardless of the horrors
which furrond them, and of the roar of the Atlantic ocean,
whose boiferous waves are inceafantly rolling over their
heads. In fome places the sea actually penetrates through;
and it is worthy of obfervation, that the water is deprifed of
a great portion of its falt; but whether this arises from
filtration, or whether fome portion of the fresh water from
the land percolated through intertenadow flifures in the rocks,
we could not aertain when we vifited this fingular mine.
If the filtration be more abundant after heavy rains, it
would prove the intermixture of rain-water. The thin crofs
courses filled with clay called flucan, leave the eai£ and weft
veins, and also hold up the water. The vein which is see
in ore on one side of the fracture, will be poor on the other side. This fact, which we believe has not been sufficiently noticed, is well discerning, and would indicate that the presence of water affected the contents of veins.

Some veins contain little diversity in the nature of their contents, being filled principally with one kind of ore or vein-tone. Other veins contain a great variety of minerals, without any apparent regularity of arrangement; there are also numerous veins which have a regular structure, the different minerals being arranged in parallel layers, coating each other: the same succession of different minerals occur on each side and meet in the middle, filling up the vein, or sometimes leaving an empty space between. Thus calcareous fsp, flour fsp, barytic fsp, lead-ore, blende, and grey copper-ore, form different layers over each other in the same succession on each side of the vein. In the Botallack mine, before described, copper-ore is frequently found lining each side of the vein, and this is covered by tin; but in other parts of the mine the tin covers the walls, and is succeeded by copper.

**Irregular Veins.**—Belides rake-veins, which may be considered as regular, there are other veins which present a great variety of structure, and are called belles, pipes, &c. according to their form. If a rake-vein be regarded as a tubular mass of mineral matter intersecting mountains, if this vein become irregular, and have its sides closed, or, as the miners call, *twisted in*, it forms what they denominate a pipe-vein, or mafs of ore and vein-tone sometimes of a tubular shape, depending to a considerable distance like a pipe. In other instances, the sides are closed in both above and below, as well as on the sides, inclining what the miners call a *belly*, or mafs of ore of considerable magnitude. Sometimes a small rib of ore is continued through that part of the rock where the sides of the vein are twitched in, until the vein expands again and produces another mafs of ore. In some instances there is no ore between, a rib of vein-tone or rider of clay being carried through the narrow part or *twitch* of the vein, but many of these twitches contain neither ore, clay, nor rider. In such cafes, it becomes exceedingly difficult to follow the vein through the rock, to where it opens out again.

The veins in general do not close suddenly, but the sides gradually approach each other, and the ore terminates in the form of a wedge at the *twitch.*

These contractions or twitches are of various lengths, and no miner can tell, when the vein is so squeezed in, how many fathoms he must pass through before it opens again, unless the same twitch has before been cut through above or below the part where he is working. The intervening space between two mafs of ore is called a *bar*, and sometimes extends ten, twenty, or even a hundred fathoms or more; and when it is cut through, the ore makes its appearance, and begins gradually to widen and form another mafs or belly. When one of these bellies of ore proves pure and solid, it generally happens that all the contiguous bellies prove so in the same vein. According to Mr. Forster, bellies have been known of eight hundred *lings* of ore being raised by six miners from one of these bellies in the space of nine weeks.

When the matrix in these large bellies of ore is soft, the ore is generally found in a globular form, more or less irregularly imbedded in the soft materials, and these globular masses of ore are of various dimensions. It is an uncommon thing to find the soft openings in this kind of vein swell to an enormous width, so as to make it difficult to find the real sides of the vein. Working these veins is the most difficult part of mining, as there is no proceeding a foot without advancing timbers as far as they go, in the form of a paffle in a house, composed of two side-poles, a lintel and a fole. The miners stand within this square frame, where they work and erect more timber as they proceed. It frequently happens that the ore is so plentiful and rich in this kind of metallic repository, as abundantly to compensate for all the labour and expense.

**Flat Veins and Beds.**—When a vein runs parallel with the *strata*, it is called a flat vein. If the *strata* are soft, and the metallic matter is widely distributed, such veins do not differ from beds, being regular beds or *strata* impregnated with metallic matter. If flat veins run between hard *strata*, they are also liable to contractions, or *twitches*, and again expand, forming *pipes* or tubular masses of ore, which extend in an inclined position, having the same dip as the *strata*. Flat veins may be distinguished from beds by this character; proper flat veins appear to be openings between the *strata* which have been filled with metallic matter from a rake-vein, or are at least connected with it, as they seldom are productive of ore, except in the vicinity of the vein; whereas beds are regular *strata*, having the same elevations and depressions as the other *strata* in a mountain, but containing metallic matter more or less abundantly scattered through them. Iron ores and ores of manganese frequently occur in beds, forming regular parts or layers of the mountain. Other metallic ores, which occur less frequently and abundantly in beds, are, we believe, for the most part veins which have taken the course of the softer beds and distributed their contents through them. It is well known, that when a vein descends through *strata* of different kinds of rock, it grows wider in the softer *strata*, and contracts in the harder beds of rock.

The metalliferous beds in Cumberland appear, in many instances, to be soft beds, rendered productive of ore by a number of small veins running through them. There are few metallic beds in England, except in that county. Manganese occurs in beds in red sand-iron in the vicinity of Exeter, but the metallic matter decreases as the beds dip from the surface. Metallic beds, in primary countries, occur most frequently among the schistose mountains, composed of gneisfs, mica-slate, and slate. (See Rock.) It is observed, that the ores and minerals which occur in beds are seldom crystallized, as these beds contain few druses or cavities to admit the formation of crystals. The minerals in beds are accompanied with garnet, actinolite, and hornblende, which never occur in rake-veins. See Garnet, &c.

**Stock-works.**—When a rock is crossed and penetrated by a great number of small veins in every direction, the whole mafs is worked as an ore, and is called by the Germans a *stock-worke*, or *werke*, the rock being afterwards separated from the ore by pounding and washing, in the same manner as the vein-tone is cleared from the ore in other mines. When the ore is disseminated in particles through the rock, such rocks are also worked for the ore when it exists in sufficient quantity. In some instances, mafs of ore of great magnitude are found imbedded in rocks, without any apparent connection with veins, which mafs must have been formed at the same time with the rock itself.

Rocks and *strata* are sometimes penetrated by metallic falls or oxids, diffused through the mafs in the same manner as we frequently observe *strata* of sand-iron abounding with the red oxyd of iron. Where the metals are valuable, such impregnated rocks or *strata* are sometimes worked as ores. At Alderley Edge, a hill near Macclesfield, in Cheshire, the sand-iron, which is in some parts a kind of breccia, is impregnated with the black oxyd of cobalt, with the carbonate and oxyd of copper, and with particles of sulphuret and
and carbonate of lead, and has formerly been worked for
the lead and copper, and more recently for the cobalt.
Mr. Williams, in his "Natural History of the Mineral King-
dom," describes a singular stratum of flint near Loughmough,
in the shire of Moray, of about eight feet thick, which is
composed of several species of hard and fine flintes of various
beautiful colours. "This stratum is a kind of pudding-flint,
in the composition of which there is blended about an eighth
part of good blue lead-ore or galena.

"This curious bed of flint is nearly horizontal, but dips
away with an easy slope towards the north of the Moray
Firth. The lead is found in larger and smaller grains and
flowers, blended through the whole body and composition
of the flint, in the same manner as the small mafies of
agates and coloured cystals, and other species of flint, are
found blended through the whole body of the stratum."

Where metallic ore is thus intermixed with fragments of
rock forming a conglomerate or breccia, it may probably be
referred to the same kind of metallic repository as stream-
works, (ice Stream-Work,) in which particles and maffes
of ore are intermixed with loose pebbles and sand, forming
beds at the bottom of valleys, or on the sea-foote, the met-
thal matter, as well as the pebbles, being derived from the
disintegration of rocks containing metallic veins; but in the
instance cited by Mr. Williams, the parts have become united,
forming a solid stratum.

The manner in which metallic veins were filled with ore
has greatly divided the opinions of geologists. George
Agricola, a Saxon, who died in 1555, appears to have been
the first writer who had any distinct knowledge of the struc-
ture of metallic veins, which he published in a work entitled
"De Rö Metallica," and another work entitled "Berman-
us." His theory of veins is in some respects similar to that
of Werner, who has lately excited much attention. Accord-
ing to Agricola, the rents or fissures which are filled with
metallic matter were partly formed at the same time with
the rocks themselves, and partly afterwards, by the waters
penetrating the softer parts; so that where there has been a
larger quantity of water, or where theibusance of the rock
has been much softened, there the largest fissures occur.
With respect to the earths and flones found in veins, he con-
ceives the former to have been detached from the rocks and
carried into the veins by water; the latter he considers as
arising from the earthy matter, hardened partly by change
of temperature and partly by a lapidific juice. Minerals
and metals he regards as being deposited from a solution in
water, containing the earthy parts intimately mixed and combined
with it in certain proportions. The solution of these me-
tal flubances he conceives to have been greatly promoted
by heat, on the abstraction of which they assume their pre-
ent solid form; the precious metals being the reftult of a
more pure and perfect solution.

Becher, in his "Physica-Subterranea," published in 1669,
ascibes the formation of metals and minerals to certain sub-
terranean vapours which arise from the bowels of the earth,
and penetrating the flubance of veins, produce a peculiar
change in the earthy or flomy matter they meet with. He
regards the earth as a hollow body, filled with clay, water,
fluphureous and bituminous flubances, from which arise
certain exhalations that form the metals. The celebrated
German phyfician Stahl, confiders veins, as well as the sub-
stances they contain, to have been formed at the same time
with the earth itself, and of course as being contemporaneous
with the rocks they interfet; but he is disposed to attri-
bute some effect to the action of air and other caufes.

Henkel, in his "Pyritologia," has given an ingenious theory
of the formation of metallic veins, which has been adopted,
VEIN.

From the third letter of that work we make the following extract.

"In explaining the phenomena which are observable in the interior of mountains (it must however be remembered, that I do not include such as are evidently of volcanic origin), I do not allow myself of those great causes which, by their magnitude, the suddenness of their action, and by their effects, produce sudden changes which take place under our eyes, such as subterranean fires, earthquakes, and the like. I refer these phenomena to natural causes, which, though left evident and flower in their operation, are no lefs certain of producing a radical transformation. Of this kind are putrefaction and fermentation. It is of little consequence by what name we distinguish this peculiar action exerted by Nature in the mineral kingdom; it consists in an infinite motion in the central parts of the globe, and appears to be produced by water combined with heat in different degrees of intensity. I observe such changes still going on, and can conceive them to continue so long as the same series of operations exist in nature. I am persuaded that there is constantly going on in our mountains a variety of transformations, compositions and decompositions, which not only take place at present, but will continue to the end of time.

"Fermentation, if I may be allowed to call by that name this quality which acts by indescribable degrees, produces the most perfect transformations in the bowels of the earth; fermentation I say may, according to my theory, alter the entire mass of a mountain; it may convert granite into gneis, as this last only differs from the former in its structure, which is flaty or schistofe; gneis indeed has no other distinctive character than its structure, namely, the regularity and parallelism of its beds, and in some places a decomposed felspar approaching to clay. This fermentation may also convert greywacke into an argilaceous schist, which last may again by inundation become jasper, when this process is either diminished or flopt. By it, also, quartz may be converted into clay, carbonaceous substances into quartz, and the whole mass of a mountain into inflammable or saline matter, or even into ores, metals, or ferrimetallics. To it I ascribe the power of producing, preserving, and continuing to form the different beds and mineral repositories, which are found both in primitive and felsztz mountains; finally, the effects which the waters produce in filtering from above to below, and which in their passage through the different rocks may undergo some peculiar modification, appear to me the principal cause why this fermentation may act with more force in one part of the same mountain than in another."

Patrin, a celebrated French mineralogist, considers the changes taking place in the mineral kingdom, as effected by a process somewhat similar to secretion in the animal and vegetable kingdoms, and ascribes a kind of mineral life to the earth itself, differing perhaps as much from vegetable life as the latter differs from that of animals. According to this theory, each kind of mineral substance is capable of converting metals of mineral matter into its own peculiar nature, as animals convert their aliment into flesh and blood. Whatever may be thought of this theory, we believe that those who are most practically conversant with the various phenomena and transmutations that occur in mines, will readily admit that many changes are taking place, which cannot be explained on any known chemical or mechanical principles, and which bear a strong resemblance in their effects to the processes of secretion. Nor can it, even in the present state of chemical science, appear improbable that the different earths and metals may be converted into each other by natural processes. The different beds of rock intersected by metallic veins, are themselves metallic substances combined with oxygen; or, in other words, all the rocks and strata which form the earthy parts of the globe, consist of oxygen combined with metallic bases; and as these metallic bases may perhaps be compounded of the same elementary parts united in different proportions, the transmutation of one earth or metal into another, may be effected by a simple change in the arrangement of the elementary molecules.

The theory of veins proposed by Von Oppel, and in part supported and extended by Werner, supposes veins to have been fissures originally formed by the deflection of mountains, and the sinking in of the mafes. These fissures, being open at the top, were afterwards filled with their contents by metallic solutions poured in from above. Mountains, according to Werner, have been formed by a successive accumulation of different beds and layers, placed or heaped over one another. "The substance of these beds was at first wet, and possessed little solidity; so that when the accumulation of matter had attained a certain height, the mafes of the mountain yielded to its weight, and must consequently have sunk and cracked. As the waters which filled in supporting the mafes began to retire, and lower their former level, these mafes then left their support, and yielded to the action of their weight, opening, and falling to the side where the least resistance was opposed. The sinking of the mafes of a mountain produced by deflection, and still more the fractures by earthquakes, and other similar causes, may also have contributed to the formation of fissures.

"The same precipitation, which in the humid way formed the strata and beds of rock, furnished and produced the subvention of veins. This took place when the solution, from which the precipitation was formed, covered the existing rents, which were as yet wholly or partially empty, and open in the upper part. Veins, whether considered as rents, or as the subvention constituting the vein, have been produced at very different times; and the antiquity or relative age of each can be easily determined."

Such, in Werner's own words, are the great outlines of his theory, a theory which we conceive to be decidedly opposed by all the most striking appearances existing in the mineral kingdom, and equally opposed to the simplest known and acknowledged laws of nature. If metallic veins were once open fissures, filled by precipitations from a solution that covered the whole globe, with the highest mountains in which metallic veins are found; it is obvious that these metallic precipitations would be most considerable in the lower parts of the surface, in valleys and plains, where the fluid must have been much deeper than on the summits and sides of mountains. We ought, therefore, to find thick beds of metallic matter covering and incrusting the low and level parts of the globe; but nothing is more rare than to find beds of metallic matter in low plains. Where beds of metallic matter exist, it is always in comparatively high countries, abounding in veins; and it is much more probable that the beds and veins were formed by local causes, and not from a solvent covering the whole globe. The metallic parts of this metalliferous ocean must have possessed the greatest specific gravity, and instead of floating on the top of the fluid, to be deposited in the fissures of lofty mountains, it would have descended by the laws of gravity, forming crusts of different degrees of thickness from the bottom to the top, increasing downward. The reverse of this is the fact. It is principally in alpine districts, and at enormous heights, that metallic matter is accumulated in the greatest abundance. It is in the heights of the Cordilleras of Peru that the productive mines of Potosi are situated: it is in the same chain of mountains, more
than 14,000 feet above the level of the sea, that the prodigious mass of mercurial ores is found at Guanaca Velica, where, in the space of two centuries, more than 15,000 quintals of this metal have been procured.

But the facts most opposed to the theory of Werner are those which we have stated, namely, that when a metallic vein passes through different strata, the mineral substances it contains generally vary in each stratum, either in kind or quality. Sometimes an entire change takes place, as from tin to copper or lead; in other instances, the vein will contain the same kind of ore in the different strata, but it will be invariably richer or poorer in some of the strata than in others, and there will be certain strata in which scarcely any ore occurs. Very frequently where the same kind of metallic matter is contained in the vein, it will be mineralized or combined with different substances, as the vein passes through different beds; thus we find a metallic sulphuret more prevalent in one part, and a metallic silt or oxidel in another part of the vein.

In Derbyshire, where the veins of lead pass through different beds of mountain lime-flone, which alternates with beds of bafalitic ormydoid, provincially called toad-flone, it is found that the vein scarcely ever contains lead as it passes through the toad-flone, where it is always much narrower, and in some places appears to be entirely cut off by it; but on sinking into the beds of lime-flone, the vein is found again, and is as productive as in the upper beds. Where the vein can be traced through the toad-flone, it contains calcareous spar, and sometimes a few particles of lead-ore. If veins had been filled from above by metallic solutions, it is impossible to conceive that the nature of the rock could change the quality of the ore; much less could the ore disappear in one stratum, and appear again in a stratum below it. Professor Jameson, in a paper published in the Memoirs of the Wernerian Society, has attempted to explain the difficulty presented by the interruption of the veins in Derbyshire, on the supposition that the different beds of lime-flone and toad-flone, together with the metallic veins, were contemporaneous, and that the toad-flone cut through the veins at the period of their formation. On this hypothesis, Mr. Bakewell, in his Introduction to Geology, remarks: “The existence of different organic remains in the upper and lower beds of the mountain lime-flone in Derbyshire, precludes the possibility of these beds having been all formed at the same time. The zoophytes in the lower beds of rock could not be living and co-existent with the shell-fish in the upper, nor with the vegetables, the remains of which are occasionally found in the sand-flone that covers the whole, and into which the veins sometimes shoot. Cuvier has well observed, that the existence of different organic remains in the upper and lower strata offers incontestible proofs that they were formed in succession over each other.” In point of fact also, the veins are not always cut off by the toad-flone; but they are never productive of ore, where they pass through it, except in very small particles.

These facts are not less opposed to the igneous theory of metallic veins than to that of Werner. If metallic veins had been filled with their contents by the operation of subterranean fire, which cracked the surface, and injected the metallic matter in a flate of fusion, it is impossible to conceive that the nature of the rock, through which the veins pass, could have produced any material change in the quality of the ore. Metallic ores may, in some instances, have been formed slowly by exhalations from subterranean fires; as specular iron-ore, and even gold, has been found in the craters of volcanoes; and the phenomena, presented by the lava which destroyed Torre del Grecco in 1794, indicate the manner in which such ores are formed. The lava had buried entire houses for more than twelve months, at the latter end of which time it had considerably cooled; and when the houses were opened, pieces of iron were found converted into a plate of black, red, and magnetic oxides, having the hollow parts and interfaces filled with a brownish-red transparent oxid of iron, and with specular iron-ore. In the articles made of iron, which had undergone this change, the external form was scarcely altered, which evinces that the crysals had been produced by sublimation. Copper articles were changed into crystralized red oxid of copper, and red oxid with green and blue carbonate. From the absence of metallic sulphures, it is inferred that the lava contained little, if any, sulphur. These changes shew that metallic matter may be sublimed and converted into the state of ore by subterraneous heat, at a much lower degree of temperature than has been suppos'd.

There is a circumstance on which those who contend for the aequous formation of metallic veins have laid much stress. In some instances, rounded pieces of flone, apparently resembling water-worn pebbles, have been found in mines at a considerable depth; but as many veins contain hollow spaces, through which water is continually running, the formation of pebbles might admit of a satisfactory explanation, without supposing that these pebbles had fallen in from above. The pebbles which we have seen of this kind, from the mines in Cornwall, are all of a chlorite fchilitus, and the form oblate, presenting the appearance which may frequently be observed in rocks of the same kind. It is in all probability an original formation, and not a breccia from pre-existing rocks.

There is another circumstance which appears to have escaped the attention of geologists. The water in the mines of Cornwall, particularly in the vicinity of copper veins, has a temperature considerably above that of the natural temperature of the earth; it is said to be at 70° Fahrenheit; and the working miners, from its sensible warmth, can predict with certainty the vicinity of a copper vein. The increase of temperature, if any, in the vicinity of tin veins is less sensible.

From hence, as well as from various appearances in mines, we are led to infer that there are certain chemical changes now going on in the interior of the earth; and it is from a more enlarged acquaintance with these phenomena, that we can alone expect to obtain a satisfactory theory of the formation of metallic veins.

The following is a summary account of the rocks and situations in which metallic ores are generally found.

Platina, and the recently discovered metals, palladium, rhodium, olimium, and iridium, have not been hitherto found in veins, but in the sands of rivers. The four latter metals are found as alloys in the grains of platina. See Platina, Palladium, &c.

Gold and silver are found in veins, and diffeminated in primary and transition rocks, in porphyry, sienite, and the lower sand-flone. Gold has been occasionally discovered in coal, and is very abundantly diffeminated in the sands of some rivers. See Gold and Silver.

Mercury is found in slate, in lime-flone, and in secondary strata. See Mercury.

Copper occurs in veins and beds in primary and transition rocks, in porphyry and sienite, and occasionally in sand-flone. Masses of native copper, of large size, are found on the surface of the ground, in the interior of North America. See Copper.

Lead and zinc occur in veins, and diffeminated in primary
VEIN.

and transition rocks, except trap and serpentine, in the lower secondary flata, and in porphyry and diabase. See Lead and Zinc.

Antimony occurs in veins in primary and transition mountains, except trap and serpentine.

Bismuth, cobalt, and nickel, occur in primary and transition mountains, except line-flone, trap, and serpentine. Cobalt and nickel also occur in transition mountains, and in sand-flone. See Bismuth, &c.

Arsenic occurs in veins, either as a sulphuret or mineralizer of other metals, in primary and transition mountains, and in porphyry. See Arsenic.

Tellurium occurs in veins in porphyry, combined with gold. See Tellurium Mines.

Manganese occurs in beds and veins in primary and transition mountains, and in beds, and disseminated in red sand-flone. See Manganese.

Molybdenum, tungsten, and titanium, occur in granite, gneiss, mica-flone, and argillaceous schistus. Theses metals, with chromium and cerium, are very rare, and can only be reduced to the metallic state with great difficulty. See Molybdenum, &c.

Mineral veins differ from metallic veins, being destitute of ores, and filled with the same substances which compose entire rocks, or with earthy minerals.

Quartz veins (see Quartz) resemble in their structure and position many metallic veins; and it not unfrequently happens that a vein, which contains metallic ore in one part, intermixed with quartz and other vein-flones, will, in another part, be entirely filled with quartz. Quartz veins intersect almost all primary and transition rocks, but are particularly abundant in rocks of argillaceous schistus and greywacke. (See Rock.) The quartz in veins is most frequently white, and nearly opaque; and being much harder than the rocks which it intersects, it remains on the summits of mountains, after the surface of the rock is decomposed, until it is carried down by diluvial currents into the beds of rivers, where it becomes rounded by attrition, and is transported to distant districts. Most of the white quartz pebbles in England have probably been formed from the quartz veins of decomposed rocks, as no quartz of a similar kind exists as a rock in any part of England or Wales; but the same mineral abounds in veins.

Granite, argillaceous schist or flake, porphyry, green-flone, pitch-flone, basalt, and various other rocks, frequently form veins in mountains of the same kind with themselves, or in different rocks. Where a vein of one kind of rock intersects a rock of a similar kind, the substance of the vein generally differs from that of the rock in texture, colour, and other characters. The granite in veins, which passes through granite rocks, will generally be coarser or finer grained than the rock which it passes through, and have the constituent parts differently mixed. The followers of Werner assert, that veins which contain rock substances have been filled from above by matter poured into the fissures, and that the granite in veins is of a secondary formation. They further maintain, that the lower rocks, which they consider as the older, never rise into the upper rocks in the form of veins. In opposition to this opinion, it has been discovered that veins of granite, in Cornwall, may be distantly seen rising into the schist or killas which covers the granite rocks in many parts of that county, particularly at St. Michael's mount, east of Penzance, and at Moudefhole, two miles west of that town. Where the junction of the granite and schist is exposed by the action of the sea, veins of the former rock may be traced, at low water, running in a zigzag form for many yards into schist, gradually growing narrower, and terminating in small branches and fringes. One circumstance we observed in these granite veins at Moudefhole, which may deserve notice: the same vein which penetrated the schist, when it entered the granite, was different in texture from the granite rock, though it had the same constituent parts; it might be distinctly traced for a considerable distance into the granite. The granite also, in the vicinity of the schist, was smaller grained than the general body of the rock; and the fclay, where in junction with the granite rock or granite veins, was changed to a kind of very fine-grained gneiss. These facts seem to indicate that both the granite and the schist, to a considerable distance from their junction, had been in a softened flate at the same time, and that their consolidation was contemporaneous. Similar appearances, with an intermixture of veins of schist in granite, are frequent at Glenilt, and other parts of Scotland. Veins of granite, porphyry, or schist, never penetrate the upper secondary flata, but veins of basalt and trap (see Trap) have been found in every kind of rock, even penetrating chalk. These veins are sometimes of vast extent and width, and frequently occasion great diffcations and derangements in the stratified rocks, particularly in the coal flata, where they have been most observed: hence they are called faults. (See Fault and Strata.) The dislocation of the flata by a vein of this kind is represented in Plate II. Geology, fig. 8, where the different flata, c, d, e, f, &c., on the left-hand side, are separated from the corresponding flata on the right, and considerably elevated.

As the veins of trap or basalt are nearly vertical, and often several yards in width, and the subsidence with which they are filled being frequently harder than the flata which they intersect, these veins remain when the surface is decomposed to a considerable depth, rising like a wall or fence, which, in the language of North Britain, is synonymous with dyke; hence such veins have been called dykes, or whin-dykes, the term whin-flone being used to denote basaltic rocks. (See Whin-stone.) Basaltic veins, or whin-dykes, vary in width from a few inches to several yards, and are sometimes more than one hundred yards wide. They often extend many miles in length; in other infinences they terminate at shorter distances, forming irregular wedge-shaped masses. When basaltic dykes are of considerable width, the basalt is interfaced by fissures; and sometimes the central parts and sometimes the sides are harder or softer than the other; and in some parts the basalt graduates into a dark ferruginous clay. Masses of basalt from the dyke are frequently found wedge in between the flata, extending from some distance, and where basaltic dykes intersect coal flata, the coal in the immediate vicinity of the dyke has frequently the appearance of being charred. At Corkfield-shield, in the county of Durham, the coal flata are cut through by a basaltic vein or whin-dyke, which is about seventeen yards wide. Where it comes in contact with the coal, the latter subsidence, for several feet, is converted into a pulvulent flate, like foot. At a greater distance from the basalt, the coal is reduced to a coke or cinder, which burns without smoke, and with a clear durable heat. At the distance of fifty feet from the basalt, the coal is found in the flate of common mineral coal. The roof over the coal is lined with bright crystals of sulphur, probably sublimed by heat from the pyrites common to coal. In these appearances we recognize every circumstance which might be expected from the agency of heat, but which would be extremely difficult to reconcile with the aqueous formation of basalt. We have seen similar appearances near basaltic dykes in Northumberland. The vein, or dyke, of basalt
at Cockfield-fell, is part of the longest dyke which has been traced in England, or perhaps in any other country. According to the description of it in Mr. Bakewell’s Introduction to Geology, “it extends from the western side of Durham in an eastward direction, to Bewick in Yorkshire, crossing the river Tees at this place, and proceeding in the same direction through the Cleveland hills, in the East Riding of Yorkshire, to the sea-coast between Scarborough and Whitby. It rises to the surface, and is quarried, in many parts of its course, for flone to repair the roads. It crosses the turnpike near the seven mile-flone from Whitby to Pockering, where there is a quarry funk in it. The vein, or dyke, is here about ten yards wide; the flone is a dark greyish-brown basalt, and is the principal material for mending the roads in the district called Cleveland. The extent of this dyke has been traced in a direct line about seventy miles. In its course it intersects the metalliferous lime-flone of Durham, the coal district, and the aluminous schistus. The circumstances attending this and other extensive dykes, which have not hitherto been regarded by geologists, completely invalidate,” says Mr. Bakewell, “the theory, that these dykes were originally open fissures, formed by the drying or shrinking in of the rocks. As the different rock formations through which it passes contain different organic remains, they must have been formed in succession at different periods, and the metalliferous lime, with the lower flata, must have been consolidated long before the upper flata were deposited; and the caudes which might dispose the upper flata to shrink and open, cannot be supposed to act on the lower rocks. It is also remarkable, that the width of this vein is more than twenty yards in the lower rocks on the east; but in the upper rocks it is not more than ten yards. The dyke must have been filled with its contents at the time of its formation, otherwise it would contain fragments of the rocks which it intersects. As it passes through the lime-flone, it has rendered it more crystalline in its vicinity, and the effects in charring the coal, before defibed, point to subterranean fire as the original cause of its formation, and as the source whence the basalt that fills it was supplied. The close resemblance between the basalt and compact lava, add probability to the opinion that this great dyke was originally formed by an expansive force operating from below, which opened a chasm in the surface of the earth, and ejected the contents in a flote of fufion. A volcanic dyke was formed on the western side of Vesuvius, June 12, 1794, two thousand three hundred and seventy-five feet in length, and two hundred and thirty-seven feet in breadth, through which lava rose to the surface. This lava, when cooled, formed a wall of flone intersecting the former beds of lava, and constituting a real dyke. The flone has a dark-grey colour, and is in some parts so compact as to resembile horn-flone.” See Volcano.

The effects of basaltic veins on the contiguous parts of the flata of sand-flone which they intersect, are no less remarkable. In some instances, the sand-flone appears very considerably indurated, and converted into a subflata resembiling horn-flone.

It is observed by Mr. Allan, Transact. of the Royal Society of Edinburgh, vol. vii. that the sand-flone which is thus indurated, contains calcareous earth, which appears to have promoted its semi-vitrification; but where the sand-flone remains unchanged in the vicinity of a dyke, the calcareous earth is wanting. Sir G. Mackenzie observed basaltic dykes in Iceland, the walls or sides of which were lined with a glassy subflata resembiling obsidian. These effects offer further illustration of the igneous origin of basaltic veins. A very interesting account of the effect produced by basaltic veins on the different beds of rock at the Giants’ Cauflway, and on other parts of the same range on the north coast of Antrim, is given in the third volume of the Transact. of the Geological Society.

Various beds of columnar basalt, argillaceous lime-flone, and chalk, are interfaced by perpendicular dykes or veins of basalt. The chalk in the vicinity often undergoes a remarkable change, extending eight or ten feet from the wall on each side, and thence gradually decreases. The part nearest the basalt is converted into a dark-brown crystalline lime-flone, like coarse-grained primitive lime-flone. The next flate is that of finer-grained primitive lime-flone, or faccharine lime-flone; then fine-grained arenaceous lime-flone. A compact variety, having a porcelain aspect, and a blue-grey colour, next succeeds; this, towards the outer edge, becomes gradually white, and insensibly graduates into unaltered chalk. The flints in the altered chalk assume a greyish-yellow colour. The altered chalk is highly phosphoreous when subjected to heat. In other parts of the range, the argillaceous beds of chalk appear converted into horn-flone by contact with the basalt, and contain in that flate the imbedded fossils peculiar to the flia stratum. (See Strata.) The basalt in some of the veins is columnar; but the columns lie horizontally. It has been conjectured, with some probability, that this has been caused by its falling from a flate of igneous fluidity, and the refrigeration commencing from the sides. From the same cause, in the beds of columnar basalt in that range, (see Giants’ Caufway,) the columns are perpendicular, the cooling commencing from the top and the bottom of each bed. The marine organic remains in the flata over the basalt, prove that the whole were formed under the sea. In some instances, basaltic veins appear to have been opened, and the intervening space filled with debris from the upper flata; and there are basaltic dykes in Northumberland, in which the basalt being divided into irregular masses, the interspaces are filled with iron-clay, and contain impressions of ferns, like those in the coal flata which these dykes or veins intersected. On the whole, no country in the world which has yet been examined presents so many interesting appearances of basaltic veins as the northern parts of Great Britain and Ireland, nor are they anywhere exposed to the eye of the observer with so much distinctness as on many parts of the sea-coast, where the ocean has bared the surface, and exposed the most magnificent and instructive sections of entire mountains, penetrated by these veins to the height of many hundred feet. The veins may often be seen extending from the mountains into the sea, rising up like enormous walls, which serve as monuments of the ravages of the ocean upon the coast. The great hardness of the subflata which fills the veins has prevented their destruction by the waves that have broken down and removed the mountain mafles in which these veins were once imbedded.

Messrs. Lewis and Clarke, the American travellers, describe extensive walls of dark columnar flone ranging through the interior of North America; these walls were undoubtedly dykes or veins of columnar basalt, remaining where the surface of the ground had been washed away. There are also instances where the subflata of basaltic veins has been softer than the surrounding rock, and is washed out wherever the rock is exposed, forming deep fissures, with perpendicular walls of rocks on each side. Such appearances are not uncommon on the sea-coast in various parts of Scotland.

For an account of basaltic rocks, see Trap.

Vein is also applied to the streaks, or waves, of diverse colours appearing on several sorts of woods, flones, &c.
VELAINE, in Geography, a town of France, in the department of the Meurte: 6 miles E.N.E. of Nancy.

VELAM, a town of Hiadooftan, in the country of the Navys: 34 miles E. of Calicuit.

VELAMEN, is used, by some Surgeons, for the bag, skin, or bladder, of an impomithome, or swelling.

VELAMENTUM BOMBYCINUM, a name which some anatomists give to the velvet membrane, or inner skin of the interlines.

VELANGOODY, in Geography, a town of Hindooftan, in Marawar; 7 miles W. of Trumian.

VELANI, in Botany and the Arts, sometimes called Valonia, a name given by the modern Greeks to the acorns of a species of oak, (see Quercus Égloph, and Quercus Infestoria,) denominated the "Velanida." The tree grows on the western coast of Notolia, in the islands of the Archipelago, in those of Corsa and Cephalonia, and throughout all Greece. For an account of the galls of this oak, we refer to the article Galls. The Oriental fakes care to gather the galls at the precise time which experience has proved to be most favorable, or in which the excrence has acquired its full size and weight. For this purpose, they visit the hills and mountains that are covered with oaks. The first galls that are picked up are laid apart; these are known in the East under the name of "Yerd," and distinguished in trade by the terms of "black galls" and "green galls." These which have escaped the first searches, and which are gathered a little later, called "white galls," are of a very inferior quality. The galls of the environs of Moful and Tocat, and in general those which come from the eastern part of Turkey, are less esteemed than those of the environs of Aleppo, Smyrna, Magnesia, Karabfaff, Diarbekir, and the whole interior of Notolia. The former are sold at Smyrna and at Aleppo two or three paisles les per quintal than the others. The inhabitants neglect to gather the acorns, which serve as food for the wild boars and goats; the latter contribute very much to render the oak small and stunted, by devouring, with its fruit, a part of its foliage and young boughs.

The diploepis which produces these galls has a body of a fawn-colour, with the antennae dark, and the upper part of the abdomen of a shining brown. It is sometimes found, under its latter form, in the inside of the galls which are not yet pierced. On the same oak are found other galls in great numbers, which the inhabitants neglect to gather, because they are not fit for dyeing.

The valani, or valonia, is gathered in the autumn, and dried under sheds, which protect it from rain, and is in a proper state for shipping about the beginning of March: that which is gathered on the mountains is preferred to that of the valleys. There is also a difference with respect to its age or size; the small and young is taken from the trees before it has attained its full growth, and is reckoned better than the large, or that which remains till it is full grown. Those of the best quality are usually sent to England, and the inferior to Ancona and Trieste. This gall is used for dyeing and tanning, and in Turkey a considerable quantity is consumed for the latter purpose.

The quantity shipped annually from the different Turkish ports may be calculated at from 4000 to 5000 tons. It is sent to several places in Europe; particularly London, Liverpool, Leghorn, Trieste, Ancona, and Genoa. The nut, or kernel, of the valonia is not reckoned of any value, and is sometimes picked out to save freight and charges. The lofs in weight thus occasioned, together with garbage, (that is, freeing it from dirt, flones, &c.) is from 10 to 25 per cent., according to the quality of the article, and the expense
The more resident then pays, liberal abridgment thoughts Spanish London its this specimen and fifteen painters painting, author. manca, and of the may here residence or his ferries, and theirrier.”

It was considered that the distance from which valonia, or valenii, is brought, and the heavy duty it pays, compared with oak-bark, discourage its use; but if the duty should be taken off, it is probable that the consumption would be greatly increased.

VELANIDA, in Botany. See QUERCUS, n. 68.

VELARIUS, in Antiquity, an officer in the court of the Roman emperors, being a kind of usher, whose post was behind the curtain, velai, in the prince’s apartment; as that of the chancellors, cancelli, was at the entry of the baletrade, and that of the oftiiarii at the door.

The velarii had a superior, of the same denomination, who commanded them; as we find in two inscriptions, quoted by Salmarius in his notes on Vopiscus, and by a third in Gruter.

VELASCO, DON ANTONIO PALOMINO, in Biography, was a Spanish painter and historian of the artists of his country. He was a native of Valencia, where he flourished about 1700. He was painter to Philip V., and painted many pictures for the churches and convents of Valencia, Salamanca, and Grenada, but is much better known to us as an author. He published an elaborate treatise on the art of painting, in two folio volumes, in which he notices 250 painters and sculptors who had flourished in Spain previous to the conclusion of the reign of Philip IV. Of this work, there was an abridgment published in London in 1742, entitled “Las Vidas de los Pintores y Statuarios eminentes Españoles,” of which there is an English translation.

VELASCO, in Geography, a town of North America, in the province of Mexico.

VELASQUEZ DE SILVA, DON DIEGO, in Biography, the most distinguished painter of the Spanish school, was born at Seville in 1594. His parentage was noble, being of a family originally of Portugal, which had established itself in Andalucia. Though confined in fortune, they gave him a liberal education, and, as he had evinced much inclination for drawing, placed him with Francisco de Herrera, the elder; but he afterwards became the disciple of F. Pacheco, an artist of very considerable ability, and a scholar, then residing at Seville. With him Velasquez studied attentively, and his talents displayed themselves in a variety of imitations of natural objects, particularly of peafantry in their peculiar habits and occupations. Of these we have now a specimen in England, which had at all times been esteemed as a master exhibition of his early acquirements, and celebrated under the appellation of the “Water Carrier.” It was stationed in the new palace at Madrid, but was removed from thence by Joseph Bonaparte, and was found, with a great number of other pictures, in the imperial carriage taken at the battle of Vitoria. It is now in the possession of the duke of Wellington, among the numerous other trophies of that great man’s fame. Still, however, it is considered by his grace as the property of the Spanish crown. Velasquez continued attached to this particular application of his art, conscious of his superiority, and declining to extend his views to a more elevated class of subjects, till at length the sight of some pictures by Guido and Caravaggio, which Pacheco had received from Italy, excited his emulation, and he then turned his thoughts to history and portraiture. After he had been five years with Pacheco, that master bestowed upon him the hand of his daughter in marriage, and he continued still to prosecute his art under the guidance of that able instructor. In 1622, Velasquez left Seville, to visit the metropolis of Spain and the Ecuestri, and there his talents recommended him to the notice of the count De Olivarez, the favourite minister of Philip IV., who patronized and befriended him; taking him into his own palace to dwell. Soon after he introduced him to the king, who immediately ordered him to paint his portrait. From the completion of this picture, which was upon a grand scale in armour, and on horseback, the reputation of Velasquez was elevated above all his contemporaries, and his patron was ordered to inform him, that from that time the royal perufu would be intrusted to no other painter but himself. He received the royal permission to make a public exhibition of it, when it was loudly applauded by all about the court, and held up to public estimation by laudatory verbes in its honour from the poets.

After this successful commencement of his public career, he was employed to paint the portraits of the infants Don Carlos and Don Fernando; and that of the minister, his patron, mounted, like his royal master, on a noble Andalussian charger, richly caparisoned. He now, therefore, began to enjoy the blessings of fortune, as well as those of fame. He was appointed principal painter to the king, with a liberal salary, besides receiving munificent remuneration for his pictures, and being busily occupied in portraits.

He now also, in emulation of other Spanish painters, determined to undertake a work upon a more extended scale than he had before done, and took for his subject the expulsion of the Moors from Spain by Philip III. But, if we may judge by the description given of the picture, it does not appear to have possessed much interesting matter of a high historic quality; however, he gained great reputation from the skill with which he executed it. The composition represented the king armed, and in the act of commanding a party of soldiers, who are escorting a group of Moors of different sexes and ages to the sea-shore for embarkation. On the other side is personified the kingdom of Spain, as a majestic matron, with a stately edifice. This picture, as appears by an inscription upon it, was painted in 1629, and it was no sooner completed than he again experienced the munificence of his sovereign, who made him one of his chamberlains, and allowed him an additional stipend.

It was at this time that Rubens visited Madrid. He formed an intimacy with Velasquez, and first inspired him with a desire to visit Italy; and he obtained from his royal patron every advantageous means of going there, with recommendatory letters to render his residence in Rome and Venice as useful and agreeable to him as possible.

He embarked at Barcelona in 1629, and first landed at Venice, where he was received and entertained by the Spanish ambassador. In this delightful birth-place of colouring, the works of its great master Titian, in the palace of St. Marc, excited his warmest admiration, and he made several copies of them; and no one ever more thoroughly imbibed the principles upon which they are constructed. But perhaps it is of Titoreto that Velasquez is more the imitator, than of Titian. His freedom of pencil appears to have been more congenial with the taste of the Spaniard, than the sober and more correct hand of the former. After remaining at Venico
nice a few months, he went to Rome, where he was most generously received by the cardinal Barberini, nephew to Urban VIII., who procured for him apartments in the Vatican, and access at all times to the works of Raffaelli and M. Anguissola. During his residence at Rome, he painted his celebrated history of Joseph's coat brought to Jacob; and also another very able work, of Apollo informing Vulcan of the infidelity of Venus; in which he had an opportunity of displaying his power of handling, and his admirable skill in colouring. Vulcan is at his forge, the light and shadow proceeding from which are most skilfully conducted; the strong and molecular forms of the Cyclops gracefully contrasted with the pure form of the Apollo; and the whole composition arranged with infinite judgment. Both these pictures were sent to Spain, and honoured by having distinguished, places affixed to them in the palace of the king.

On his return home he went to Naples, and there painted the portrait of Donna Maria of Austria, queen of Ferdinand III. After about the lapse of a year and a half, he arrived at Madrid, and found his favour with his royal master undiminished. He was again lodged in the royal palace, and the king kept a key of his painting room, that he might have free access to him without ceremony; and this he frequently indulged himself with, as his great predecessor, Charles V., had done with Titian. And so strong were the reminiscences in his pictures, that it is said the king, going into his room one day, expressed some surprise, that a nobleman, to whom he had given a commission which required his absence from Madrid, had not departed, imagining that he saw him in the room, when it was in reality only his portrait.

In 1638, Velasquez painted his most celebrated picture of our Saviour on the Cross, for the convent of St. Placido, at Madrid; and about the same time, that of the general Pescara receiving the keys of a Flemish citadel from the governor of the place. The management of all the different characters, the officers, &c. and the effect of the fortification, &c. of the town and landscape in the back-ground, is altogether eulogized by Mengs as the chef-d'œuvre of Velasquez.

Though his patron d'Oliveres fell into disgrace in 1643, yet Velasquez maintained his interest at the court; and in 1648, was commissioned by the king on a particular embassy to pope Innocent X., and at the same time was empowered to purchase for his majesty the finest works of art, both of sculpture and painting, which he could procure in Italy. On this occasion he embarked at Malaga, and having landed at Genoa, passed through Milan and Padua to Venice, where he was well pleased to renew acquaintance with the great masters of art, whom he had before beheld with so much admiration. He afterwards visited Bologna; and on his arrival at Rome, was received with great favour and distinction by the pope; and in the unengaged moments of his more serious business, he painted a very fine portrait of his holiness, of which there is a capital exemplar at Luton, the seat of the marquis of Bute, which has every character of originality. For this painting, the pope gave him a gold medal and chain; and the academicians of St. Luke elected him of their body.

After a lapse of nearly three years, Velasquez took his departure from Genoa, in a vessel freighted with a magnificent collection of pictures, statues, busts, &c. which he had collected, and on his arrival was most graciously received by the king, and honoured with further marks of his royal favour and bounty; among which the order of Santiago was not the least, as being confined to persons of the highest rank, or the most eminent abilities. He thus lived, in honour and riches, till 1660, when the ruthless hand of death put an end to his labours and enjoyments. He was buried with great funeral pomp in the church of San Juan.

VELATODURUM, or Velatudurum, in Ancient Geography, a place on the route from Belfancio to Epamandodurum or Mandura.

VELAUNI, a people of the Maritime Alps near the sea, E. of the Nerufii.

VELAUR, in Geography, a river of Hindoostan, which rises near Attore, in the Mylore country, and runs into the bay of Bengal, near Portonovo.

VELAY, before the revolution, a country of France, in Languedoc, situated to the W. of the Vivarais, and the E. of Auvergne. It is mountainous, but fertile: Le Puyen Velay was the capital. It now constitutes the department of the Upper Loire.

VELAZGHERD, a town of Persea, in the province of Kerman; 54 miles N.E. of Goornon. N. lat. 28° 10'. E. long. 56° 34'.

VELBERG, a town of Germany, in the territory of the imperial town of Hall; 7 miles E. of Hall.

VELBERT, a town of the duchy of Berg; 5 miles N.N.E. of Medman.

VELBURG, a town of Bavaria, in the principality of Neuburg; 12 miles N. of Dietfort. N. lat. 49° 10'. E. long. 11° 28'.

VELCERA, in Ancient Geography, a town on the coast of Illyria, between the mouth of the river Genes and the town of Senia. Ptolemy.

VELDEN, in Geography, a town of Bavaria; 6 miles S.S.W. of Landhut.—Allo, a town of Germany, in the territory of Nuremberg, on the Pegnitz; 21 miles N.E. of Nuremberg. N. lat. 49° 37'. E. long. 11° 31'.

VELDENTZ, a town of France, in the department of the Sarre, formerly capital of a county, in the circle of the Upper Rhine, united with the palatinate; the environs are celebrated for an excellent Moselle wine; 17 miles E.N.E. of Treves. N. lat. 49° 55'. E. long. 6° 50'.


VELEIA, a town of Hispia Citerior.—Allo, a town of Italy, S. of Placentia, in Gallia Cispadiana; now in ruins.

VELEN, in Geography, a town of Germany, in the bishopric of Munster; 22 miles W. of Munster.

VELETRI, a town of the Popedom, in the Campagna di Roma. This was a very ancient town, and considerable in the time of the first Roman kings. It was taken by Ancus Martius, fourth king of the Romans, and retaken by the Volscans, under the command of Coriolanus. The Romans took it again some time after, and, removing the inhabitants, filled it with a Roman colony. It is the see of a bishop, united with Ostia, who is called the bishop of Ostia, but his residence is at Veletri; 28 miles N.N.W. of Terracina. N. lat. 41° 42'. E. long. 12° 50'.

VELEZ, a town of South America, in New Grenada; 100 miles from Santa Fe de Bogota. N. lat. 5° 50'. W. long. 73° 16'.

VELIZ, de Gomeria. Sec Gomeria.

VELEZ MALAGA, a sea-port town of Spain, in the province of Grenada, near the coast of the Mediterranean. The chief article of trade is raisins. In 1487, this town was taken from the Moors by Ferdinand, king of Castile and Aragon; 13 miles E. of Malaga. N. lat. 36° 47'. W. long. 4° 18'.
VEL

VELEZ el Rubio, a town of Spain, in the province of Grenada, near the Guadalentin. This town was, in the time of the Moors, a strong place, and furnished with a garrison; 14 miles S. of Huéca.

VELEZAR, a river of Spain, formed by the union of the little rivers Bercia and Sil, on the confines of Leon, which, after receiving several other small streams, unites with the Minho, a little above Ornde.

VELEZIA, in Botany, was so named by Linnaeus, at the recommendation of his pupil Lejjling, in honour of Dr. Christophal Velez, examiner, first physician, and demonstrator of botany, at Madrid, who gave Lejjling his manuscript Flora of the environs of that capital, which we do not find to have ever been published.—Linn. Gen. 176.


Gen. Ch. Caryophyllum. Velizianum, one of the flims, long and slender, with five angles, five intermediate furrows, and five pointed, erect, small teeth, permanent, without any appendages at the base. Cor. Petals five, well defined, small, narrow, the length of the calyx; limbs spreading, oblong-wedge-shaped, clavate or toothed, hairy at the base, much shorter than the claws. Stam. Filaments ten, cylindrical, about the length of the calyx, inserted into the receptacle; anthers roundish, incumbent. Ptl. Petals superior, cylindrical, short; styles two, thread-shaped, hardly so long as the stamens; stigmas simple. Peric. Capsule cylindrical, fleshy, of one valve and one cell, opening with four teeth at the summit. Seeds numerous, oblong, alternate, imbricated downwards, concave in front, convex at the back, inserted in a simple row, by the dorsal furrow, into a thread-shaped, unconnected receptacle.

Eff. Ch. Calyx of one leaf, nearly cylindrical, furrowed, naked. Petals five, with very long claws; limb bearded at the base. Capsule superior, cylindrical, of one cell. Seeds imbricated.

A small genus of slender campion-like plants, with numerous little pink flowers, nearly related to Saponaria, (see that article,) and certainly to be placed next to it in the artificial, as well as natural, families. Linnaeus knew but one species. We have a new one found by Dr. Sibthorpe in Ais Major.


2. V. quadridentata. Four-toothed Velezia. Sm. Prodr. Fl. Græc. Sibth. n. 954. Fl. Græc. t. 591, unpubl.—Calyx club-shaped, smooth. Petals with four teeth. Gathered by Dr. Sibthorpe in Ais Minor, and, if we are not mistaken, in the island of Patmos. This has the peculiar habit of the foregoing, but is rather larger, and quite smooth. The flowers are flaked. Calyx angular, swelling upwards. Limb of the corolla marked like V. rigida, with a central flare; but each petal has four strong teeth, or acute lobes, instead of being only simply clavate. Each claw is crowned, in both species, with a tranverse row of white hairs. Stamens in the present all of equal length. Capsule rather flatter, shorter, and less accurately cylindrical, than the former.

We have no doubt of this genus being equally distinct from Saponaria and Gypsophila, (see those articles), though the first species betrays a slight affinity to the former, the second to the latter. An ovate, even calyx, and oblong capsule, are proper to Saponaria; a bell-shaped angular calyx, and almost globular capsule, to Gypsophila. Velezia is perhaps more naturally akin to Dianthus, but wants the scales at the bottom of the calyx.

VELHAS, in Geography, a town of Brazil, which runs into the Parana.

VELIA, or HELIA, in Ancient Geography, a town of Italy, in Lucania, westward, on a small gulf of the same name, formed by the small stream Helis, from the Greek Ἡλία, signifying a marsh.—Alfo, a town of Hilipan Citerior, belonging to the Carif. Ptolemy.

VELICALA, in Geography, a town of California, near the coast of the Pacific ocean. N. lat. 26° 35'. W. long. 115° 5'.

VELIDIA, a town of Morocco, on the coast of the Atlantic; 25 miles S.W. of Mazagan.

VELIKA, a town of Moldavia; 25 miles S.E. of Segna.—Alfo, a river of Croatia, which runs into the Save, near Cralioa Velika.—Alfo, a river of Russia, which runs into the Viafka, 10 miles N.E. of Orlov, in the government of Viafka.—Alfo, a river of Russia, which runs into the Tchudikoi lakes, near Pilov.

VELIKIE LUKI, a town of Russia, in the government of Pilov, on the Lovat; 124 miles S.E. of Pilov. N. lat. 56° 28'. E. long. 30° 14'.

VELIKOJ, a small island of Russia, in the White sea. N. lat. 66° 45'. E. long. 34° 20'.

VELILLA, a town of Spain, in the province of Aragon. The author of the "Continuation of Mariana's History of Spain," speaks of a bell in this town of great celebrity, which rung sometimes without the help of man; and that a particular description of its wonders was printed at Madrid in 1657.

VELINO, a mountain of Naples, in Abruzzo Ultra; 12 miles S. of Aquila. This is one of the Apenines, and probably the highest of them. Its summit, 8979 feet above the Mediterranean, is covered with snow in June: about 46 geographical miles N.W. of Rome.—Alfo, a river of the Popedom, which runs into the Nera, about four miles from Termi, in the duchy of Spoleto.

VELINUS, (VELING,) in Ancient Geography, a small river in the country of the Sabines, in the northern part; its sources were about twenty miles from Reate, towards the E., in mountains abounding with water. It passed southward, by a place called Vacunia, afterwards by Intercrce, where it turned towards the W., to the plain on which was situated Cutilix. Changing its direction towards the N.W., it entered an immense plain, in which were high mountains, and formed a large lake. These
flagrant sulphureous waters were found very inconvenient. M. Curius pierced a mountain and made a canal to the Vellina, so that its waters had a free passage to the sea, by a valley, which Cicero compared to the valley of Tempé. The inhabitants of Reate found here abundance of roes, whence they called it Rosea. The Velinius discharging itself into the Nar near Interamna.—Allo, one of the seven mountains of Rome.

**VELLACOMAS.** Vellicasses of Cæsar, Vellicasses of Pliny, and Vellicasses of Ptolemæus, were a people joined by Cæsar to the Cætuli, and others among the Belgæ, separated by the Seine from the Celts. But in the division of Gaul by Augustus, the Vellicasses, as well as the Cætuli, are placed in the Lyonnæ, and they are referred to in that province by Ptolemæus and Pliny. Their capital, Rotomagus, became the metropolis of the second Lonnæ, when the Lyonnæ of Augustus was divided into two provinces.

**VELIUSCUM,** a place of Africa, in Mauritania Cæsariensi, upon the route from Ruficurrum to Celama, between Carte and Taramatau. Anton. Itin.

**VELITES,** in the Roman Army, one of the four kinds of foot soldiers that composed a legion, who were armed lightly with swords, bows and arrows, slings, and javelins. For defensive armour they had only a small target, and a helmet or head-piece. These were commonly young men of mean condition, and took their name à volando, or à velocitatem, from their swiftnes and expedition: and they were designed for skirmishing with the enemy before a battle, and pursuing them after a defeat.

They seem not to have been divided into any distinct bodies or companies, but to have hovered in loose order before the army.

The other classes of the Roman infantry were the batai, principes, and triarii. In the day of battle, the batai were placed in the first line, the principes in the second, and the triarii in the third. The Velites formed small flying parties both in front and rear. See **BATTLE.**

**VELITTIS,** in the Natural History of the Ancients, the name of a peculiar sort of sand used in the manufacture of glases; for which purpose they always chose such as was found washed clean on the banks of rivers; and this they therefore called glases-sand, or velites, or hyalitis.

**VELITRÆ, or VELITRIS,** in Ancient Geography, a town of Italy, in Latium, in the country of the Volcicns.

It was at some distance from the Appian way, S.E. of Alba, and became considerable under the Romans. It had an amphitheatre, of which no trace now remains. Two roads led to Velitrae; one to the W. detached itself from the Appian way, the other to the E. communicated with the Latin way. See **VELITRÆ.**

**VELIZ,** in Geography, a town of Russia, in the government of Polotsk; 88 miles E. of Polotsk. N. lat. 55° 20'.

E. long. 31° 4'.

**VELLY,** in Rural Economy, a term applied in some districts to the bag or stomach of the calf, which is used in making running or rummet; or to the prepared stomaches of the animals or renet for curdling the milk in cheese-making, which are often called wells. In some dairies, instead of making the rennet ready some time previous to its being used, a small piece, proportioned to the quantity of milk to be coagulated, is cut from the yell over-night, and put into half a pint of water, or whey, to infuse until the morning. In this case, the vell are to be suppos'd to be equal in goodnes; and it is probable, that the virtue may not be so fully extracted as by a longer infusion. It is suggested too as not improbable, but that the strength of the rennet might be ascertained by means of experiment, by the application of alkaline salt, and by such means be rendered more certain in its use. See **DAIRYING.**


Gen. Ch. Cal. Perianth inferior, cylindrical, creft, of four linear, obtuse, closely converging, deciduous leaves. Cor. crenulate, from four obovate spreading petals, whole claws are the length of the calyx. Stam. Filaments furcifer, as long as the calyx, the two opposite ones rather shorter; anthers simple. *Piñ.* German superior, ovate; lyle greatly dilated, bordered, leafy, ovate; stigma obtuse. *Peric.* Pouch orbicular, tumid, entire, of two cells, crowned with the permanent, ovate, erect, rigid flyle, which is a continuation of the membranous partition. *Seeds* several, roundish; *their cotyledons folded;* *Brown.*

Obf. *V. Pseudo-cyrtis* has the four larger filaments deftinate of anthers, and combined together in pairs. *Linnaeus.*


2. *V. Pando-cyrtis.* Shrubby Cref-rocket. Linn. Sp. Pl. 895. Wildf. n. 2. Ait. n. 2. Cavan. Ic. v. 1. 32. t. 42. (Cytisus facie Alcyon fruticos quorundam; Linn. Ic. v. 3. 49. *Cytisus aderliaus,* five Alcyon fruticos; Ger. Em. 1506.)—Leaves undivided, obovate, fringed. Pouches erect.—Native of the neighbourhood of Araujue in Spain, flowering in May. Sometimes kept for curiosity as a hardy greenhouse plant, but not remarkable for beauty. The *flum* is shrubby, branched, roughish, two feet high. Leaves alternate, rather lefthy, entire, rough, scarcely an inch long, tapering down into a short *footstalk,* and generally accompanied by two smaller leaves. *Flowers* in long spikes, yellow, with pale veins. Permanent *flyle* broad, nearly
nearly orbicular, scarcely longer than the poucb. Ca-
venilles says he found all the authors correct, though Lin-
næus is correct in his description of the combined filaments.

VELLA, or Verra, in Geography, a river of the Ligurian
republic, which runs into the Magra, three miles above
Sarzana.

VELLACHERY, a town of Hindoostan, in the Carn-
atic; 10 miles S.E. of Madura.

VELLADY, a town of Hindoostan, in Myfop; 14
miles S. of Dammicotta.

VELLAS, a town of the island of Ceylon; 44 miles
W.N.W. of Candi. N. lat. 7° 45'. E. long. 80° 16'.

VELLATOOOR, a town of Hindoostan, in Mysop;
5 miles E. of Coimbetore.

VELLECHYPALEAM, a town of Hindoostan, in
Mysop; 13 miles N. of Coimbetore.

VELLEIA, in Botany, received its name from the au-
thor of the present article, in honour of his highly valued
friend Col. Thomas Velley, F.L.S., author of a descrip-
tive work on the Submarine Plants of Britain, with coloured
plates, in folio, confifting of only one fasciculus. This
amiable and accomplished botanist was unfortunately killed
by accident, a few years since, in the town of Reading, as
he was travelling between Bath and London.—Sm. Tr. of
580. Labillard. Nov. Holl. v. 1. 54. (Euthales; Brown
—Clas and order. Pentandria Monogynta. Nat. Ord. Cam-
Gen. Ch. Cal. Perianth inferior, unequal, either of
three or five roundish, or of one leaf in five segments,
the upper division largest, permanent. Cor. of one petal,
irregular; tube rather longer than the calyx, split longitud-
inally at the back, almost to the base, more or less tumid,
or spurred, underneath; limb in five rather unequal, spread-
ing, bordered, broad-keeled segments, almost two-lipped.
Stam. Filaments five, thread-shaped, shorter than the tube,
inferted into its membranous base, alternate with the seg-
ments of the limb; anthers erectile, oblong, unconnected,
of two cells, bearing a large, prismatic, filamentous, 
filament thick, obtuse, encompassed with a membranous,
cup-shaped, abrupt integument. Peric. Capsule of one
cell and four rigid valves. Seeds several, orbicular, com-
pressed, roughish, imbricated on both sides of a central re-
cepctacle, shorter than the valves.

Eff. Ch. Calyx inferior, three or five-cleft, unequal.
Corolla tubular, five-cleft, two-lipped; tube cloven at
the back. Capsule of four valves and one cell. Seeds imbric-
ated, orbicular, compressed.

Obf. Mr. Brown's Euthales is so strictly united in habit
and character, except the calyx, with our Velleia, that we
cannot but consider it as of the same natural genus. Our
learned friend, from whom we always scruple to differ, has
discovered some acknowledged Velleia with five leaves to the
calyx, instead of three, originally attributed to it. Here
then is an approach toward the five-cleft, though single-
leaved, calyx of Euthales. Linnaeus has declared, Phil.
Bot. sect. 170, "Karo observatur genus in quo pars atque 
frutescens non aberrat." The calyx appears to be the
part in Velleia which runs wild, if we may so translate it,
and flinkingly confirms the above maxim. We may ex-
tend this observation to the whole order of Mr. Brown's
Goodenovia, in which even the situation of the calyx,
whether superior or inferior, is not uniform; which cir-
cumstance must lead us to mistrust other differences in
the same part, when not supported by other characters.

Without attention to such principles as these, we may
almost, as Linnaeus says, make as many genera as species
of plants.

Sect. 1. Calyx of one leaf, in five segments. Euthales-
Brown.

Holl. v. 1. 54 t. 77. (Euthales trineriav; Brown Prodr.
t. 466. Curt. Mag. t. 1197.)—Calyx tubular, of one leaf,
in five acute segments. Leaves downy.—Native of the
south coast of New Holland. Sent to Kew garden in
1803, by Mr. Peter Good. A perennial greenhouse herb,
flowering most part of the year. The root is fibrous. Stem
none. Leaves all radical, numerous, downy, more or less
acute, tapering at the base; sometimes entire; sometimes
toothed, or partly runcinate. Flower-stalks numerous, a
span high, nearly erect, forked, with a pair of opposite lan-
colate bracteas at each division. Flowers stalked, erect,
yellow; keel of each segment green underneath; two
upper ones marked in front with a dark brown spot; all
marginate; tube white, enclosing the flaments and styles.
The flowers seem variable in size. We should hardly, with-
out Mr. Brown's authority, have supposed all the above
fynonyms to belong to the same species.

Sect. 2. Calyx of five leaves. Corolla with a spur at
the base, which is permanent. Menoceras (a fention of Velleia).
Brown.

1. n. 1.—"Downy. Leaves bluntly toothed."—Native of
New South Wales, Van Diemen's island, and the south

2. n. 2.—"Smooth. Leaves sharply toothed."—Gathered by
Mr. Brown, on the south coast of New Holland.

Sect. 3. Calyx of three leaves. Corolla a little gibbus,
on one side, at the base. True Velleia. Brown.

4. V. lyrata. Lyrate Velleia. Br. n. 3.—Smooth.
Bracteas distinct. Leaves orbicular, or sharply toothed at
the base. Calyx-leaves roundish-ovate.—Native of Port Jack-
fon, New South Wales. This is our original species of
the genus. The leaves, all radical, much relumb thofe of
Crypta tetragon. Stalks a span high, rigid, once or twice
forked; one branch at each fork being sometimes wanting.
Bracteas ovato-lanceolate, acute, entire, separate at the
base, with a small internal tuft of hairs. Flowers yellow,
on short partial stalks. Calyx-leaves quite distinct, acute,
nearly entire, a quarter of an inch long, downy within;
the upper one rather broadest, and almost orbicular.

Bracteas distinct. Leaves spinate, almost without teeth;
quently entire at the base; with auxillary tufts of hairs."—
Observed by Mr. Brown near Port Jackson, as well as in
the tropical part of New Holland.

Bracteas distinct. Leaves toothed. Calyx-leaves oblong-
ovate, acute."—Native of the tropical part of New Hol-

Bracteas very large, combined, roundish, toothed."—
Found by Mr. Alexander Gordon, in the neighbourhood
of Port Jackson, but seen by Mr. Brown in a dried state
only.

The whole genus is stenemies, and we believe the flowers
are all yellow.—None but the first species has hitherto made
its appearance in the European gardens, though some of
them might possibly prove hardy annually, if not perennial
with us.
VELLEIACUM, in Ancient Geography, a town of Italy, in the midst of the hills of Gallia Cilpadanca, according to Pliny.

VELLEITY, Velleitas, in the School Philosophy, is usually defined a languid, cold, and remsi will.

Others say, it implies an impotency of obtaining what we require. Others will have it, a slighc desire for something, which a perfon does not esteem much, or is too indolent to seek; as Catus amat pigem, sed non vult tangere lympham.

VELLEIUS, in Biography. See Paterculus.

VELLEKAT, in Geography, rocks in the East Indian sea, about 15 miles E. from the island of Myfol. S. lat. 2° 1’. E. long. 131° 2’.

VELLEPEKONDA, a town of Hindooftan, in Golconda; 15 miles S. of Warangole.

VELLIA, in Ornithology, a name used by some authors for the lanius minor, or lanius tertius of Aldrovand, called in England the flæther.

VELLIAM, in Geography, a town of Hindooftan, in Coimbetore; 16 miles S.E. of Errood.

VELLICA, in Ancient Geography, a town of Hispania, in the territory of the Tarragonone. Ptolemy.

VELLICATION, among Physicians, the act of twitching or stimulating. The word is more particularly applied to a sort of sudden convulsions that happen to the fibres of the muscles.

VELLICULA. See Varicula.

VELLIN, in Geography, a town of Pomerania; 4 miles N.N.E. of Polnow.

VELLING, in Agriculture, a term applied to the operation or process of ploughing or cutting up and taking off the turf or upper surface of the land, in order to its being burnt, or for other purposes. It is usually performed nearly in the same manner as baulking or rell-baulking, except that instead of being turned over, the furrow-slice is, in some cafes, cut with its turf upwards; and the work in this process is in effect the same thing; but as the outer point of the wing of the furrow in the plough is turned upwards, there is less necessity for holding it an oblique position. The plough too in executing this operation, is always turned to the right upon the headland, which is contrary to that which is practised in ploughing, the slice or furrow being turned towards the ploughed instead of the unploughed land. In velling, the plough is thrown so far into the land from the line of drainag, as to enable the ploughman to carry with ease about twice as much land as is displaced by the ploughed slice, which is pared very thin and even, and on the land fide not cut so deep as in the operation of skirting, but gradually lifted and turned neatly on its green side upon the baulk, left on the right-hand or furrow side of the plough. This manner of ploughing, in contradistinction to splitting, is called, in some districts, gathering of the land; and the day-work five or six roods. See Splitting.

In cafes where the furrow-slice is not turned, it is in some places drawn out with small hooks, by the labour of women and boys, or harrowed, and then raked together in heaps, and burned. This is a mode of velling which is commonly adopted in cafes where there is not time to permit the turf to rot, as is the cafe in other methods of practice. See Paring and Burning, and Turning to Rot.

VELLO, in Geography, a town of Italy, in the Veronese; 10 miles N. of Verona.

VELLON, in Commerce, a kind of money, in which accounts are kept in many parts of Spain. The real vellon is the most general money of account: it consists of 8½ quarts, 17 ochavos, or 34 maravedis vellon. Madrid, and all Castile, with most of the adjacent provinces, and also Bilboa, Malaga, and Galicia, keep accounts in reals and maravedis vellon. See Maraved and Real.

VELLOUL, in Geography, a town of Hindooftan, in Gucerat, on the coast; 9 miles W.N.W. of Puttan Sumnaut.

VELLUM. See Velon.

VELLUM, in Geography, a town of Hindooftan, in the Carnatic; 5 miles S.W. of Tanjore. N. lat. 10° 43’. E. long. 79° 7’.

VELLY, Paul-Francis, in Biography, was born near Fifines, in Champagne, in 1711. Quitting the society of Jefuits after having belonged to it for about eleven years, he devoted himself to historical researches. His chief work was his “Histoire de France,” in 6 vols., written in an easy and correct style, and polishing the character of candour and truth. He is charged, however, with too often attacking the privileges of the clergy, and with having borrowed freely from Voltaire’s Eloge on General History, and with having been milled in some instances by adopting his sentiments. This history, which he terminated with Charles le Bel, was continued to the 16th volume by Villaret. He also published a translation of Swift’s “History of John Bull.” He was virtuous and amiable, and of a very cheerful disposition. His death happened in 1750.

VELMES, in Geography, a town of France, in the department of the Dordogne; 15 miles S.W. of Mucidan.

VELOCE, Ital., in Music, swift; Velocissimo, superl. very swift.

VELOcity, in Mechanics, swiftness; that affection of motion, by which a moveable is dispelled to run over a certain space in a certain time.

It is also called celerity, and is always proportional to the space moved.

Huygens, Leibnitz, Bernouilli, Wolfius, and the foreign mathematicians hold, that the momenta, or forces, of falling bodies, at the end of their falls, are as the squares of their velocities into the quantity of matter: the English mathematicians, on the contrary, maintain them to be as the velocities themselves into the quantity of matter. See Motion.

Velocity is conceived either as absolute or relative: the velocity we have hitherto considered is simple or absolute, with respect to a certain space moved in a certain time. Relative or respectif velocity is, that which with two distant bodies approach each other, and come to meet in a longer or less time; whether only one of them moves towards the other at rest, or whether they both move; which may happen two ways, either by two bodies naturally approaching each other in the same right line, or by two bodies moving the same way in the same line, only the foremost slower than the other: for, by this means, this will overtake that; and as they come to meet in a greater or less time, the relative velocity will be greater or less.

Thus, if two bodies come nearer each other by two feet in one second of time, their respective velocity is double that of two others, which only approach one foot in the same time.

Velocity is also uniform or equal, when a moving body passes through equal spaces in equal times; or unequal, when in equal times it passes through unequal spaces; in which case it is either accelerated or retarded; and this acceleration, or retardation, may also be equal or unequal. See Acceleration and Motion.
VELOCITY.

In the doctrine of fluxions, it is usual to consider the velocity with which magnitudes flow, or are generated. Thus the velocity with which a line flows, is the same as that of the point which is supposed to describe or generate the line. The velocity with which a surface flows, is the same as the velocity of a given right line, that, by moving parallel to itself, is supposed to generate a rectangle, always equal to the surface. The velocity with which a solid flows may be measured by the velocity of a given plane surface, that, by moving parallel to itself, is supposed to generate an erect prism, or cylinder, always equal to the solid. The velocity with which an angle flows, is measured by the velocity of a point, supposed to describe the arc of a given circle, which subtends the angle, and measures it. See Macl. Fluxions, book i. chap. i.

All these velocities are measured at any term of the time of the motion, by the spaces which would be described in a given point of time, by these points, lines, or surfaces, with their motions continued uniformly from that term.

The velocity with which a quantity flows at any term of the time, while it is supposed to be generated, is called its fluxion. See Fluxion.

VELOCITIES of BODIES moving in CURVES. According to Galileo's system of the fall of heavy bodies, which is now admitted by all philosophers, the velocities of a body falling vertically are, each moment of its fall, as the roots of the heights from whence it has fallen; reckoning from the beginning of the fall. Hence that author inferred, that if a body fall along an inclined plane, the velocities it has, at the different times, will be in the same ratio; for since its velocity is altogether owing to its fall, and it only falls as much as there is perpendicular height in the inclined plane, the velocity should be measured by that height as if it were vertical. See Inclined Plane.

The same principle, likewise, led him to conclude, that if a body fall through two contiguous inclined planes, making an angle between them, much as a flock when broken, the velocity would be regulated after the same manner, by the vertical height of the two planes taken together; for it is only this height that it falls; and from its fall it has all its velocity.

This conclusion was universally admitted till the year 1693, when M. Varignon demonstrated it to be false. From his demonstration it should seem to follow, that the velocities of a body falling along the cavity of a curve, for instance, of a cycloid, ought not to be as the roots of the heights, since a curve is only a series of an infinity of infinitely little contiguous planes, inclined towards one another; so that Galileo's proposition would seem to fail in this case; and yet it holds good, only with some restriction.

All this mixture of truth and error, so near akin to each other, flowed that they had not got hold of the first principle; M. Varignon, therefore, undertook to clear what related to the velocities of falling bodies, and to fet the whole matter in a new light. He still supposes Galileo's first system, that the velocities, at the different times of a vertical fall, are as the roots of the corresponding heights. The great principle he makes use of to attain his end, is that of compound motion.

If a body fall along two contiguous inclined planes, making an obtuse angle, or a kind of concavity between them; M. Varignon flows, from the composition of those motions, that the body, as it meets the second plane, loses somewhat of its velocity, and, of consequence, that it is not the same at the end of the fall, as it would be, had it fallen through the first plane prolonged; so that the proportion of the roots of the heights affected by Galileo does not here obtain.

The reason of this loss of velocity is, that the motion, which was parallel to the first plane, becomes oblique to the second, since they make an angle: this motion, which is oblique to the second plane, being conceived as compounded, that part perpendicular to the plane is lost, by the opposition thereof, and part of the velocity along with it; consequently, the loss of the perpendicular there is in the oblique motion, or, which is the same thing, the lefs the two planes are from being one, i.e. the more obtuse the angle is, the less velocity does the body lose.

Now all the infinitely little, contiguous, inclined planes of which a curve consists, making infinitely obtuse angles among themselves; a body falling along the concavity of a curve, the losses of velocity it undergoes each instant is infinitely little; but a finite portion of any curve, how little forever, consisting of an infinity of infinitely little planes, a body moving through it loses an infinite number of infinitely little parts of its velocity; and an infinity of infinitely little parts makes an infinity of a higher order, i.e. an infinity of infinitely little parts makes a finite magnitude, if they be of the first order or kind; and an infinitely little quantity of the first order, if they be of the second, and fo in infinitum. Therefore, if the losses of velocity of a body, falling along a curve, be of the first order, they will amount to a finite quantity in any finite part of the curve, &c.

The nature of every curve is abundantly determined by the ratio of the ordinates to the correspondent portions of the axis; and the essence of curves in general may be conceived as confulting in this ratio, which is variable in a thousand ways. Now this same ratio will be, likewise, that of two simple velocities, by whose concurrence a body will describe any curve; and, of consequence, the essence of all curves, in the general, is the same thing as the concourse or combination of all the forces, which, taken two by two, may move the same body. Thus we have a most simple and general equation of all possible curves, and of all possible velocities.

By means of this equation, as soon as the two simple velocities of a body are known, the curve resulting from them is immediately determined. It is observable that, according to this equation, an uniform velocity, and a velocity that always varies according to the roots of the heights, produce a parabola, independent of the angle made by the two projectile forces that give the velocities; and, consequently, a cannon-ball, shot either horizontally or obliquely to the horizon, must always describe a parabola. The best mathematicians, hitherto, had laboured much to prove, that oblique projections formed parabolas as well as horizontal ones.

To have some measure of velocity, the space is to be divided into as many equal parts as the time is conceived to be divided into; for the quantity of space corresponding to that division of time, is the measure of the velocity. For an instance: suppose the moveable A passes through a space of 80 feet in 40 seconds of time: dividing 80 by 40, the quotient 2 gives the velocity of the moveable to be such, as it passes over an interval of two feet in one second; the velocity, therefore, is rightly expressed by \( \frac{1}{2} \); that is, by 2. Suppose, again, another moveable B, which in 30 seconds of time travels 90 feet; the index of the celerity will be 3. Wherefore, since in each case the measure of the space is a foot, which is supposed every where of the same length, and the measure of time a second, which is conceived every where of the same duration;
VELOCITY.

the indices of the velocities $2$ and $3$ are homogeneal, and therefore the velocity of $A$ is to the velocity of $B$, as $2$ to $3$.

Hence, if the space be $s$, and the time $t$, the velocity may be expressed by $\frac{s}{t}$; the space being in a ratio of the time and the velocity. See Motion.

Velocity, Circular. See Circular.

Velocity, Initial, in Gunnery, denotes the velocity with which military projectiles issue from the piece by which they are discharged. This is now known to be much more considerable than was formerly apprehended. For the method of estimating it, and the result of a variety of experiments by Mr. Robins, Dr. Hutton, &c. see Gun, Gunnery, Projectile, and Resistance.

We shall here add, that Mr. Thompson (Count Rumford) has lately published the result of a variety of experiments upon gunpowder, and also an account of a new method of determining the velocities of all kinds of military projectiles. From the equality of action and reaction, it appears, says Mr. Thompson, that the momentum of a gun must be precisely equal to the momentum of its charge; or that the weight of the gun, multiplied into the velocity of its recoil, is just equal to the weight of the bullet and of the powder (or the elastic fluid that is generated from it) multiplied into their respective velocities; for every particle of matter, whether solid or fluid, that issues out of the mouth of a piece, must be impelled by the action of some power, which power must re-act with equal force against the bottom of the bore.

It is easy to determine the velocity of the recoil in any given case, by suspending the gun in a horizontal position by two pendulous rods, and measuring the arc of its ascent by means of a ribbon, according to the method which Mr. Thompson has described, and this will give the momentum of the gun, its weight being known, and consequently the momentum of its charge.

But in order to determine the velocity of the bullet from the recoil, it will be necessary to find how much the weight and velocity of the elastic fluid contribute to it. That part of the recoil which arises from the expansion of this fluid is always very nearly the same, whether the powder is fired alone, or whether the charge is made to impel one or more bullets, as Mr. Thompson has determined by various experiments.

If, therefore, a gun, suspended according to the method proposed, is fired with any given charge of powder, but without any bullet or wad, and the recoil is observed; and if the same piece is afterwards fired with the same quantity of powder, and a bullet of a known weight; the excess of the velocity in the latter case above that in the former, will be proportional to the velocity of the bullet; for the difference of these velocities, multiplied into the weight of the gun, will be equal to the weight of the bullet multiplied into its velocity.

Accordingly, if $W$ is put for the weight of the gun; $U$, for the velocity of its recoil, when it is fired with any given charge of powder, without any bullet; $V$, for the velocity of the recoil when the same charge is made to impel a bullet; $B$, for the weight of the bullet, and $v$ for its velocity; we shall have $v = \frac{V - U \times B}{W}$. Let $B = 580$ grains, $W = 336,000$ grains; and therefore, $B : W :: 580 : 336,000$; $i.e. :: 1 : 579.31$ nearly, and $V - U$ is found by experiment to be equal to $1.8522$; and, consequently, $v = 1.8522 \times 579.31 = 1073$ feet in a second; which is very near $1083$ feet in a second, the mean of the velocities determined by the pendulum after the manner of Mr. Robins.

But the theorem will be rendered more simple by putting $e$ for the chord of the recoil in English inches, when the piece is fired with powder only, and $C$ for the chord when a bullet is discharged by the same charge; and then

$$C - e \text{ will be as } V - U; \text{ and consequently, } \frac{V - U \times W}{B}$$

which measures the velocity of the bullet, the ratio of $W$ to $B$ remaining the same.

Supposing, therefore, $C - e = 1$ inch, and the velocity of the bullet to be computed from that chord; the velocity in any other case, in which $C - e$ is greater or less than one inch, will be found by multiplying the difference of the chords $C$ and $e$ by the velocity that answers to a difference of one inch. Or the velocity of the bullet, expressed in feet per second, may in all cases be found by multiplying the difference of the chords $C$ and $e$ by $118.35$; the weight of the barrel, the length of the suspending rods, and the weight of the barrel, remaining the same, whatever be the charge of powder or its strength.

According to this rule, Mr. Thompson has computed by several experiments the velocities of bullets from the recoil, and compared them with the velocities obtained by the pendulum. The result, making the necessary allowances for the difference in the conclusions arising from these two methods, leads Mr. Thompson to infer, that there is the greatest probability that the velocities of bullets may in all cases be determined by the recoil with great accuracy; and if this method succeeds with musket-bullets, it may also be applied as well to cannon-balls and bomb-shells of the largest dimensions: he apprehends also, that it will be much preferable to any other method hitherto known, not only as it may be applied indifferently to all kinds of military projectiles, with little trouble or expense, but also because by this method the velocities with which bullets are actually projected are determined; whereas, by the pendulum, their velocities can only be ascertained at some distance from the gun, after they have lost a part of their initial velocities by the resistance of the air through which they are obliged to pass to arrive at the pendulum.

Those who advert to what has been delivered under the article Gunnery, will find that, according to Mr. Robins's theory, farther confirmed by Dr. Hutton's experiments, when bullets of the same diameter, but different weights, are discharged from the same piece by the same quantity of powder, their velocities should be in the subduplicate ratio of their weights.

But this theory, says Mr. Thompson, is founded upon a supposition, that the action of the elastic fluid generated from the gunpowder, is always the same in every given part of the bore when the charge is the same, whatever may be the weight of the bullet; and as no allowance is made for the expenditure of force required to put the fluid itself in motion, or for the loss of it by the vent, he concludes that the theory is defective. And from a variety of experiments, made with a view of ascertaining this point, he infers, that the ratio of the velocities of bullets to their weights is different from that which Mr. Robins's theory supposes; and from other experiments he finds, that the velocities computed, according to the reciprocal sub-triplicate ratio of the weights, agree much better with the conclusions deduced.
duced from those experiments, than those computed upon Mr. Robins's principles; though, in this mode of computation, the difference between the actual and computed velocities was in some of the experiments considerable. But as the powder itself is heavy, it may be considered as a weight put in motion along with the bullet; and if the density of the generated fluid be supposed always uniform from the bullet to the breech, the velocity of the centre of gravity of the powder, or of the elastic fluid, and the gross matter generated from it, will be just half as great as the velocity of the bullet; putting, therefore, $P$ to denote the weight of the powder, $B$ the weight of the bullet, and $v$ its initial velocity; then $B \dfrac{1}{2} + \dfrac{1}{2} P v = B + \dfrac{1}{2} P v$ will express the momentum of the charge at the instant when the bullet quits the bore. Instead, therefore, of ascertaining the relation of the velocities to the weights of the bullets, we propose to add half the weight of the powder to the weight of the bullet, and to compute the velocities from the reciprocal sub-triplicate ratio of the quantity $B + \dfrac{1}{2} P$: and the result of several experiments shews an agreement between the actual and computed velocities that is very remarkable.

We shall only add, that Mr. Thompson disputes the justness of Mr. Robins's conclusion with respect to the force of gunpowder, which makes it 1000 times greater than the mean pressure of the atmosphere; whereas, from the result of one of his experiments, its force appears to be at least 1308 times greater than the mean pressure of the atmosphere. Phil. Trans. vol. lixxi. part ii. p. 229-321.

**Velocity, Measure of.** See **Measure.**

**Velocity of Light, Sound, Wind, &c.** See **Light, Sound, Wind, &c.**

**VeloM., or VellUM.**, is a kind of parchment (which see), that is finer, evener, and more white than the common parchment.

The word is formed from the French velin, of the Latin vitulus, belonging to a calf. See **Abortion.**

For regulations relating to makers of vellum, and duty on the same, see **Leather.**

**VELORE, in Geography, a town of Hindoostan, in the Carnatic; 14 miles W. of Arcot. N. lat. 12° 54'. E. long. 79° 15'.**

**VELOSO, a town of Portugal, in the province of Beira; 14 miles S. of St. Joao da Figueira.**

**VELPE, a river of Brabant, which joins the Demeer, at Halen.**

**VELPI, in Ancient Geography, mountains of the Cyrenaica, on the confines of Africa Propria. These mountains were inhabited by the Macatutes, according to Ptolomy.**

**VELSHER, or Welscher, Mark, in Biography, was born at Augsburg, of an ancient and opulent family, in 1558, and educated at Rome under the celebrated Muret. Upon his return to his native city he procified at the bar, and became a senator in 1592, and having attained the highest rank in the government of the city, he was regarded as its chief ornament; nor was he less distinguished as the promoter of literature and science. He died in 1614, at the age of 56. The principal of his works, which were numerous, are "Re- rum Augvltanarum Vindelicarum Lib. VIII." Venet. 1594, and "Rerum Boicarum Libri V." Aug. Vind. 1602. He was a principal contributor to Gruiter's Collection of In- scriptions, and he aided many others in their publications. A collection of his writings was published in a folio volume at Nuremberg, in 1682. Bayle. Gen. Biog.**

**VELT, or VELTE, in Commerce, a measure for brandy in several parts of France. At Bourdeaux, brandy is con- tained in casks of 50 velts, more or less; but it is sold by the barrel of 32 velts, or about 60 English gallons: 5 velts proof of Bourdeaux make 4 velts proof, by which it is sold in London. At Cognac, it is sold by the 27 velts; and 11 velts proof of Cognac make 10 velts proof, by which it is sold in London. At Rochelle, brandy from this place, Cognac, Ile de Ré, and the river Charente, is in casks of 3 barriques, containing in all 75 or 90 velts, and is sold by the 27 velts: 16 velts = about 31 English gallons. At Bourdeaux, 1.14 barrique = 100 English gallons, and each barrique measures 14.033 cubic inches: 52.74 velts = 100 English gallons, and each velt = 438 cubic inches. At Cognac, 51.68 velts = 100 English gallons, and each velt measures 447 cubic inches. At Nantes, 67.34 velts = 100 English gallons, and each velt measures 536 cubic inches; and 51.79 brandy velts = 100 English gallons, and each velt measures 446 cubic inches.**

**VEL TE, in Ancient Geography, a people of European Sarmatia, in a part of the Venedic gulf.**

**VELTHAUSEN, in Geography, a town of Germany, in the county of Beitham; 2 miles N.E. of Nienhuis.**


**Gen. Ch. Cal. none. Cor. of one petal, tubular, nearly cylindrical; limb regular, in six very short, broad, orho- equal, segments. Stam. Filaments six, thread-shaped, in- fered into the tube and not projecting beyond it; anthers ovate, cloven at the base. Pfl. German superior, roundish; style thread-shaped, decucling; stigma filiform, acute. Peric. Capsule membranous, somewhat pellucid, three-doubled, three- celled, each lobe extended into a compressed rounded wing. Seedsably foliate, obovate, rather compressed.**

**Eff. Ch. Corolla tubular, with six teeth. Stamens inserted into the tube. Capsule membranous, with three wings, and three cells, with folialyte buds.**

**Ob. Ch. This genus, confounded by Linnaeus with his Abeliris, is well separated therefrom, as well as from Tri- toma, (see those articles,) both on account of their habits and characters. The genuine Abeliris is a funnel-shaped corrugated corolla, into the base of whose segments the filaments are inserted; and many seeds in each cell of the cap- sula. Triptoma is distinguished by its long flaments, inserted into the receptacle, and projecting far out of the flower.**

1. V. wacholskia. Waved-leaved Veltheimia. Willd. n. t. Ait. n. 1. Jacq. Hort. Schoenbr. v. 1. 41. t. 78. (V. cap- pensis; Redout. Lilia. t. 1. 5. 195. Abeliris capensis; Linn. Sp. Pl. 456. Curt. Mag. t. 501.)—Leaves lanceolate, ob- tuse, with wavy edges. Teeth of the corolla rounded, creaf.,—Native of the Cape of Good Hope, from whence its bulbs are said to have been first imported into this country in 1768, by the late Mr. Malcolm. The plant is now frequent in most good greenhouses, flowering copiously in the winter and spring, yet it is not easily increased, either by root or by seed. The bulb is ovate, larger than a hen's egg. Leaves numerous, all radical, spreading, smooth, a span long.
long, entire, broadly undulated; of a deep grays-green above; pale and glaucous beneath. Stalk solitary, erect, straight, naked, eighteen or twenty inches high, elegantly spotted and streaked with blood-red or purple, bearing a long, dense, ovate cluster, of pendulous nodorous flowers, each accompanied by an awl-shaped pink bract, much longer than its stalk. The corolla is of a waxy pink, or glaucous rose-colour, pale yellow, or greenish, about the extremity; its length about an inch and a half. Capsules nearly the same length, of a tender bladdery texture, pale and pellucid, so as to show the black seeds within.

2. V. glauca. Glaucous-leaved Veltheimia. Willd. n. 2. Ait. n. 2. Curt. Mag. t. 1091. Jacq. Hort. Schoenbr. v. 1. 4o. t. 77. (Apletris glauca; Ait. ed. 1. v. i. 463.)—Leaves lanceolate, tipped with a small point; somewhat crisped at the margin. Teeth of the corolla spreading.—Native-like of the Cape of Good Hope, from whence it was brought to Kew garden by George Wyench, esq. in 1781, being among the many new species of plants, chiefly from that country or from America, for the knowledge of which the botanical world is indebted to the late Mr. Aiton, and his learned coadjutors, in the first edition of the Hortus Kewensis. The number of such is greatly increased in the second edition, principally from New Holland and the East Indies. No work of the kind has furnished so many. The plant before us differs from the preceding in having a more oblong pointed bulb; much straighter and more erect leaves, glaucous on both sides, whose marginal undulations are slight and very small. The flowers are smaller, paler, and less showy; their marginal segments more expanded. This is much more rare than V. viridifolia, being more difficult of culture and less handsome. It flowers from January to April. For the two other species referred to this genus by Willdenow, Uvoria and pumila, see Tritoma.

VELTZEN, or ULENZ, in Geography, a town of Westphalia, in the principality of Luneburg; 20 miles E. of Lucko.

VELVALEG, a town of Grand Duchy; 5 miles S. of Arlenck.

VELUCA, in Ancient Geography, a town of Hispania Citerior, belonging to the Arvaci. Ptolemy.

VELVET, a rich kind of fluff, all silk, covered on the outside with a close, short, fine, soft shag, the other side being very strong and close. The word is formed of the French velours, which signifies the fame, and which comes from velu, a thing covered with hair.

The knap or shag, called also the shelving, of this fluff, is formed of part of the threads of the warp, which the workman puts on a long narrow channelled ruler, or needle, or wire; and which he afterwards cuts, by drawing a sharp steel tool along the channel of the needle to the ends of the warp.

The principal and best manufactories of velvet are in France and Italy, particularly at Venice, Milan, Florence, Genoa, and Lucca; there are others in Holland, let up by the French refugees, of which that at Haarlem is the most considerable.

Velvets are now made to great perfection at Manchester and other parts of England. There are some brought from China, but they are the worst of all.

There are velvets of various kinds, as plain, that is, uniform and smooth, without either figures or stripes; figured, that is, adorned and worked with divers figures, though the ground be the same with the figures; that is, the whole surface velveting;—ramages, or branched, representing long stalks, branches, &c. on a fattin ground, which is sometimes of the same colour with the velvet, but more usually of a different one. Sometimes, instead of fattin, they make the ground of gold and silver, whence the denominations of velvets with gold grounds, &c.:—uncut, that in which the threads that make the velveting, have been ranged over the channelled ruler, or wire, but not cut there:—striped, that in which there are stripes of divers colours running along the warp; whether those stripes be partly velvet and partly fattin, or all velveting:—cut, that in which the ground is a kind of taffety, or gros de Tours, and the figures velvet.

Velvets are likewise distinguished, with regard to their different degrees of strength and goodness, into velvet of four threads, three threads, two threads, and a thread and a half: the first are those where there are eight threads of fagg, or velveting, to each tooth of the reed; the second have only fix, and the reed four.

In general, all velvets, both worked and cut, shorn and flowered, are to have their warp and shag of organzine, spun and twisted, or thrown in the mill, and their wool of silk well boiled, &c. They are all of the same breadth.

VELUM, in Ecclesiastical Writers, the fame with what is otherwise called brandew.

VELUM Quadragesimale, a veil or piece of hangings, anciently drawn before the altar in Lent, as a token of mourning and sorrow.

VELUM, in Anatomy, a part in the brain. See Brain.

VELUM Palatii, or Pendulum, the soft palate. See Digestion.

VENANIA, called Viana by Ptolemy, in Ancient Geography, a place of Rhetia, upon the route from Pannonia in the Gails, in passing by Sopiana, between Campodunum and Brigantia. Itin. Anton.

VEMMETSTOSTE, or Wemmelstoste, in Geography, a town of Denmark, on the E. coast of the island of Zealand; 6 miles S.W. of Heding.

VEMPUSUM, in Ancient Geography, a town of Italy, in Latium. Ptolemy.

VENA, in Geography, a town of Naples, in Calabria Ultra; 9 miles N.W. of Squillace.

VENA, in Mythology. See Vena.

VENA, Vein, in Anatomy. See Ven.

VENABULUM, in Antiquity, a long kind of spear, used in hunting wild beasts.

VENÆ LACTEA, in Anatomy, the abserving vessels, so called because they were suppos'd to be veins. See Lacteal Vasa.

VENÆ Lympathica. See Lymphatics.

VENAFRO, in Geography, a town of Naples, in Lavoria, the fee of a bishop, fullragan of Capua; 14 miles N. of Sezza. T. l. 41° 30'. L. long. 13° 58'.

VENAFRO, (Venafro,) in Ancient Geography, a town of Italy, in Campania, northwards, towards the Sannin, which became a Roman colony. It was famous for its olives and oils.

VENAISSIN, Comtat du, County of Venaisin, in Geography, a country of France, bounded on the N. by the department of the Drôme, on the E. by the department of the Lower Alps, on the S. by the department of the Mouths of the Rhone, and on the W. by the Rhone, which separates it from the department of the Gard, about 12 leagues in length, and 7 in breadth. It takes its name from Venaque, the Vendanca or Vendica of the ancients, and was poisseld, after the 11th century, by the counts of Touloufe.
Touloufe, but reasserted again in the 13th century, and held by count Raymond the elder. The papas lai claim to the sovereignty of this country from the time of count Raymond de St. Gilles, although it is certain that the emperors, as kings of Arles, had exercised that power. In the year 1234, the emperor Frederick II. transferred the imperial rights of the county of Venaissin to Raymond the younger. And the pope found himself compelled to relinquish them to him. From the descendants of Raymond, it came to Philip the Bold, king of France, who in the year 1275, restored it to pope Gregory X. as a fief of the see of Rome, and it has been governed under the popes, by officers called rectores. The soil is fertile, the climate mild, and the air pure; the productions are corn, olives, silk, saffron, and excellent wine. Carpentras was the capital. This country now belongs to France, and forms part of the department of the Vaucluse, being formally ceded by the pope on the 10th of February 1797.

VENAL, or VENOUS, among Anatomy, something that bears relation to a vein.

The extremities of the cava and pulmonary veins, where they enter the auricles of the heart, are called venous sinusae. See Vein.

VENAL, formed from venalis, to be sold, is also used for something bought with money, or procured by bribes.

Thus we lay, venal bards; courtzans and flatterers are venal; even justice, in Turkey, is venal, and must be bought of the bathaws.

In England, there are several offices in the revenue, policy, &c. venal; but this venality of offices is no where so considerable as they were in France, where all offices of judicature were bought of the king, and only municipal officers are elected. Offices in England are venal only by a kind of connivance; in France it was a thing solemn and authorized. The venality was first introduced by Louis XII. who, to clear those immense debts contracted by his predecessor Charles VIII. without burdening his people with new taxes, betook himself to sell the offices of finance; and, in reality, he made a vast sum by it; but he forbade, by an edict in 1508, the sale of offices of judicature. Francis I. made an advantage of the same expedient to get money, and sold his poits, not excepting the offices of judicature, openly: under this king, it was only accounted a kind of loan; but that loan was no more than a name to dignify a real sale. However, it is said, that the sale of offices of judicature was established by edicts of Charles IX. and that military offices were sold under the reign of Henry III.

The parliament, not being able to reft the venality of offices, always made the buyer take an oath that he did not buy his poit, either directly or indirectly; but there was a tacit exception made, of monies lent the king for being put into them. At length the parliament, finding its oppositions were in vain, and that the traffick of offices was publicly authorized, abolished the oath in 1597.

VENAMALI, in Mythology. See Vanamali.


Gen. Ch. Cal. Perianth inferior, of one leaf, cup-shaped, short, with five rounded marginal lobes. Cor. Petals five, regular, obovate, rounded, spreading, thrice the length of the calyx. Stam. Filaments five, awl-shaped, dilated at the base, the length of the petals; anthers oval, verfatile, incumbent. Pfl. German superior, ovate; style short and thick; stigma obtuse, nearly triangular. Recept.
citron in bulk, being in size equal to, and sometimes exceeding a man's head; the rind is like that of the golden
remnet; the pulp is of a reddish colour, and its taste parts
of sweet and acid, refembling that of grapes not fully
ripe. A liquar is preflled from it, as in Europe from apples,
pears, &c. It will keep for a whole year.

VENDEE, in Law, the person to whom any thing is
sold, in contradiftinction to vendor, or the fellor.

VENDEE, in Geography, a river of France, which rises
about eight miles N.N.E. from Fontenai-le-Comte, and
runs into the Sevre Niortoise, about a mile E. of Marans.

VENDEE, one of the nine departments of the western
region of France, formerly Lower Poitou, lying between
Charente and Lower Loire, in N. lat. 46° 30'; bounded
on the N. by the departments of the Lower Loire and
Mayne and Loire, on the E. by the department of the
Two Severes, on the S. by that of the Lower Charente, and
on the S.W. and W. by the sea. Its territorial extent is
7242½ kilometres, or 373 square leagues, and the number
of its inhabitants is 270,271. It is divided into 3 circles
or districts, 29 cantons, and 324 communes. The three
circles are, Sables d'Olonne, including 87,653 inhabitants;
Montaig, 65,649; and Fontenai-le-Peuple, 116,075. Accord-
ing to Hasslerat, its extent in French leagues is 24 in
length, and 21 in breadth; its circles are 6, its cantons 58,
and its population 305,610. Its capital is Fontenay. Its
contributions, in the eleventh year of the French era, were
2,438,463 fr.; and its expenses for administration, judi-
ciary, and for public instruction, were 251,615 fr. 33 cents.
This department, watered by many copious streams, is one
of the most fertile in France. It is divided by nature into
the thicket, the marsh, and the plain. The thift, so called
on account of the great quantum of wood that covers it,
includes nearly five-ninths of the whole territory. Its soil
is of various qualities, yielding grain, wine, and excellent
pastures. The second, lying on the W. and S. coasts,
formerly covered by the sea, is impregnated with saline
substances. Nevertheless it is fertile, producing plentiful
crops of grain, flax, hemp, and pastures. The third is a
fertile and well-cultivated strip of land, included between
the thicket and the S. border of the department. Bouin,
an island containing about three square leagues, participat-
es in all the qualities of the marsh. It was separated, not many
years ago, from the main land by a narrow channel, which
has now almost disappeared. Noirmontier (which fee) is a
fertile island containing about three square leagues, oppo-
site to the N. extremity of the department. It has a port
capable of receiving vessels of fifty or sixty tons. But
down of fine soil, near its N.W. coast, are frequently
raised by the wind, and driven into the interior part of the
island. Ille Dieu is a very small island, covered with a thin
bed of vegetable soil, mixed with sand, and not producive.

VENDÉLA, in Ancient Geography, a town of Hispam
Citerior, belonging to the Autrigones. Ptolemy.

VENDELOS, in Geography, a town of the island of
Ceylon; 64 miles N.E. of Candi.

VENDEN, a mountain of the Tyrole; 14 miles
N.N.E. of Brixen.

VENDEN, a town of Ruffia, in the government of Riga,
on the Aa. In the year 1577, Magnus, duke of Holstein,
was brought to this town by Ivan Vassilевич II. czar of
Ruffia, to be made king of Livonia; but the new monarch
was prevailed upon by his subjects, ever averse to the Ruflia
yoke, to form a secret alliance with the king of Poland, and
to counteract the czar's progress in Livonia. Ivan, soon
apprized of this negotiation, laid immediate siege to Venden,
with so numerous an army, that the inhabitants, finding all
opposition ineffectual, proposed to capitulate. Magnus
himself carried the terms of capitulation, and advancing to
suffocate the incensed monarch, threw himself at his feet,
and interceded for the town. The czar, spurning at him
with his foot, and striking him in the face, loaded him with
reproaches for his ingratitude, and ordered him to prifon;
then entering the town, his troops committed every species
of horror and devastation. Many of the principal inhabi-
tants, retiring into the citadell, determined to defend it to
the last extremity; but soon perceiving all resistance to be
fruitless, and expecting no quarter, they calmly assembced,
received the sacrament, and then destroyed themselves, by
blowing up the citadell; 36 miles N.E. of Riga. N. lat. 57°
12'. E. long. 25° 14'.

VENEDINUS, in Ancient Geography, a town of Upper
Moedia, at a disance from the Danube. Ptolemy.

VENDEVIU, in Geography, a town of France, in the
department of the Aifine; 8 miles S. of St. Quintin.

VENITIONI EXONAS, in Law, is a judicial writ,
directed to the sheriff, commanding him to fell goods, which
he has formerly, by commandment, taken into his hands,
for the satisfying of a judgment given in the king's court.

VENDITOR REGIS, the king's salseman, or person who
exposed to sale goods or chattels seized or disdained to
answer any debt to the king. This office was granted by
king Edward 1. to Philip de Lardimer, in the county of
York, "Ita quod ipse, vel certus suus aturnnatus, ibit ad
mandatum vicicumitis de loco in locum infra com. pred.
sumptibus suis, ad videntiones facienda, & capiat de una
quaque venditio pro feodo fuso xxxi. den.;" but the office
was feized into the king's hands for the abufe thereof,
anno 2 Ed. IT.

VENOEUVRES, in Geography, a town of France,
in the department of the Aube; 11 miles W. of Bar-sur-
Aube.

VENEDOME, a town of France, and principal place of
a district, in the department of the Loir and Cher, on the
Loir. Before the revolution, it gave name to a county in
Beauce, called Vendomois; 18 miles N.E. of Tours. N. lat.
40° 28'. E. long. t° 8'.

VENDRE, le Port, a small sea-port town of France,
in the department of the Eastern Pyrenees; 12 miles S.S.E.
of Perpignan.

VENDRELL, a town of Spain, in the province of
Catalonia; 25 miles W.S.W. of Barcelona.

VENDRESSE, a town of France, in the department of
the Ardennes; 9 miles S. of Charleville.

VENDUE, denotes an auction or public sale.

VENDUM, in Ancient Geography, the name of one of theour towns pofted by the Japodes, in the country that
extended itself from the Pannonians to the Adriatic see.

VENECAC, a town of Asia, in the interior of Media.
Ptolemy.

VENEDI, a people originally of Sarmatia, who occu-
pied the whole coalt of the Venedic gulf, and who paffed
from thence into Germania with the Slavi, where they in-
habited the territory abandoned by the Germans. Ptolemy.

Jonnades says that these people, before this migration, had
been vanquished and subjugated by Hermericus, king of the
Goths.

VENEDICI MONTES, mountains of European Sarm-
matia. Ptolemy.

VENEDICUS SINUS, a port of the Baltic see, in which
were found the mouths of the Turunta, Chefinus, Rube,
and Chronus. Ptolemy.

VENEDITOVA, in Geography, a town of Ruffia, in
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the government of Irkutsk, on the Amur; 8 miles E.N.E. of Nertchinsk.

Veneering, Veneering, or Fineering, a kind of marquetry, or inlaying, by which several thin slices, or leaves of fine wood, of different kinds, are applied and fastened on a ground of some common wood.

There are two kinds of inlaying; the one, which is the more ordinary, goes no farther than the making of compartments of different woods; the other requires much more art, and represents flowers, birds, and the like figures.

The first kind is what we properly call veneering; the latter we have already described under Marquetry.

The wood intended for veneering is first fawed out into slices, or leaves, about a line thick: in order to faw them, the blocks or planks are placed upright, in a kind of saw-prefs; the description of which may be seen under the article Press.

These slices are afterwards cut into slips, and fashioned divers ways, according to the design proposed; then the joints being carefully adjusted, and the pieces brought down to their proper thickness, with several planes for the purpose, they are glued down on a ground, or block of dry wood, with good strong English glue.

The pieces thus joined and glued, the work, if small, is put in a press; if large, it is laid on the bench, covered with a board, and pressed down with poles, or pieces of wood; one end of which reaches to the ceiling of the room, and the other bears on the boards.

When the glue is quite dry, they take it out of the press and finish it, first with little planes, then with divers scrapers, some of which resemble rasps, which take off dents, &c. left by the planes.

When sufficiently scraped, the work is polished with the skin of a sea-dog, wax, and a brush and polisher of thave-grafs: which is the last operation.

Venelius, or Venelli, in Ancient Geography, a people who inhabited the maritime part of Lyonnese Gaul, and whose capital was the town of Crociatunum. Ptolemy.

Venellis. See Vicius & venellus mundandis.

Venenum Coeci, a term used by many of the ancients for the purple tinge, which the kermes berry, as it is usually called (see Kermes), gave to linen, or other things.

The word venenum being generally understood to express poison, it has been supposed by many, that the kermes was esteemed poisonous, or that there were two sorts of this drug; the one a harmless medicine, the other poisonous. But there is no warrant for this in any of the old writers, and the whole seems indeed but a mistake about the sense of the word venenum, which we find by many passages of the best authors, signified a fainth, as well as a poison.

The ancients called the infemts dyed scarlet with the kermes indifferently, by the names of flammea or venenate. Servius tells us, that in certain sacred ceremonies, it was necessary that the priest should be clothed in a scarlet robe; and he uses the word venenate to express it in some places, and flammeo in others.

Vener, one of the many names by which the chemists call mercury.

Veneré, Cape or Capo di Venere, in Geography, a cape on the coast of Genoa. N. lat. 44° 4'. E. long. 9° 40'.

Venera Conchla, in Natural History, the name of a very large and elegant genus of shells, more usually called porcellane. See Porcelain Shell.

Veneral, something belonging to Venus.

A venereal person is one addicted to venery, or venereal pleasures. Venereal medicines are called aphrodisiacs, provocatives, &c.

Veneral Virus, in Surgery. Of all the maladies which afflict human nature, none has excited greater controversy than that to which we now refer. Fortunately, however, it is likely in the end to prove a means of inducing an accuracy in description, a clemency of reasoning, and legitimacy of induction, for which we have in vain looked in the healing art. A diseased taint, as it was called, was supposed to be everywhere present, to remain for ever with a person once infected, and to descend to his posterity. Even Aflruc, who detected some of the laws of this poison, affinities it to a Pandora's box, and describes the supposed changes it has undergone at different periods of the world, as similar to the revolutions of empires; thus eluding the most important question in his whole dissertaiton by a poetical image, and by an illustration of the immutable laws of nature, taken from the vicissitudes of human institutions. Yet even Aflruc was rational compared with some of his successors. He at least described the primary symptoms with accuracy; in the others, he seems puzzled by an attempt to reconcile contradictory opinions, and, we ought to add, by a want of confidence in his own observation: this however can only be said of primary symptoms.

On secondary symptoms, he was as much at a loss as every honest man before and since his time; and his only error was in attempting to account for these difficulties, instead of acknowledging his incapacity to do so. Boerhaave did not suppose himself to be a Tyro in this disease, after all Europe had pronounced him qualified to be a teacher in the whole science of medicine. Sydenham, with every other writer of any celebrity, will be found either admitting his ignorance, evading the question, or solving it in an unsatisfactory manner.

After all we have already said, (see Morbid Poison, and Lues Venereal,) it might seem unnecessary to return to the subject, were it not, that even in so short a time since the publication of those articles, new facts have occurred; and we shall in this, as in most inquiries into nature, every new discovery proves not only a confirmation, but in some measure an illustration of what Mr. Hunter taught us. We might add, as a further apology, that his manner of conducting this single inquiry by the facts he produced, now universally admitted, by the caution with which he drew his inferences, and the legitimate inductions which necessarily followed, affords, if not the first, the most perfect model of this mode of reasoning to be met with in the whole science of pathology.

The first consideration was to establish the true character of the venereal ulcer, or chancre. For want of this, every ulcer found in fulphurous parts was considered the effect of that morbid poison; and from this unhappy error, the firmest constitutions were often destroyed by repeated applications to cure diseases, which, if not the effect of, were exasperated by mercury. During his life-time, Mr. Hunter had the happy chance to see a little remission of this cruel practice. But unfortunately, when he could be no longer consulted in person, another error arose, namely, that all such ulcers as yielded to this remedy were venereal. Hence arose a practice the most truly empirical, that of preferring for a disease by its suppos'd name, and judging of its reality by the effect of our remedy. In vain was it argued from his writings, that the cure by the same remedy was no proof of the identity of diseases, and that even this proof, if sufficient, was rarely present; for that these ulcers which had not the true venereal character, yielded to mercury with a readiness very different from that constitutional effect which was necessary for the cure of the true venereal chancre.

Dr. Adams has since showed, (see his Morbid Poisons,) that...
all these ulcers, excepting the venereal, were well known to
Celsus, who describes with much accuracy in his chapter
de observarum partium vititi all those ulcers on the genitals
which are mentioned by writers since the appearance of
syphilis as varieties of or anomalies in the venereal charac-
ter. Yet it is hardly credible, that almost to this day
there are writers who will conceive that local diseases,
different in character in all their stages, in their mode of spreading
and healing, and requiring different modes of treatment,
must still be the same; who, while they admit that the ve-
neral diseafe is of comparatively recent origin, will still confound
it with appearances most accurately described more than
twelve centuries past.

Mr. Hunter, with that accuracy which distinguishes all
his remarks, began by fixing the character of the disease,
even shewing, that from the laws of the economy, as
afcertained in all other local diseases, such must be the char-
acter of an ulcer arising from some external cause, and for
the cure of which animal economy had made no provifion.

Firstly: In every local irritation, he shewed that a secretion
of some fluid would take place, by which the irritatting sub-
ject might be removed. The venereal matter, therefore,
irritating a solid part, induces ulceration, that the part may
rid itself of this irritating cause. But from the nature of
a morbid poison, the effeét of that irritation is to pro-
duce a local action, by which a substance is secreted similar
to that which induced the irritation. In some cases, as in
small-pox, as soon as this effeét is produced it ceaftes, and
the parts heal as readily as after any other loss of substance;
but such is not the ease with an ulcer from venereal poison.
When this is once set up, this action continues until some
substance induces a more powerful irritation, and thus super-
fede the venereal.

Secondly: When the curative process of a sore from any
cause is interrupted, it must spread, or a new action must be
set up. This new action, in common ulcers, is the formation
of thick, or, as they are usually called, callous edges, after
which the ulcer remains stationary. This was well re-
marked by Celsus, who gives this process the name of
venifus, describing the thickened lips, and remarking, that
whilst they continue, no applications to the ulcer are of
any ufe.

Thirdly: The peculiarity which distinguishes the venereal
ulcer from all others is, that the incapacity in the part to
alter the diseased action, produces the fame effeét as in
parts where there is any other impediment to healing;
namely, the thickened edge and bafe. But though the
attempt at healing is given up, still the irritation continues
from the constant prefeence of the virus, and consequently the
ulceration also, in order to rob the part of the caufe of such
irritation. Hence we have what is not to be met with in
any other ulcer, namely, a continued ulceration, attended
with or accompanied by a hard edge and bafe. This is
the only true primary venereal ulcer, and the only ulcer or
vitium not defcribed by Celsus in the chapter before
alluded to.

The next question was, in what manner a disease incur-
able of itself was always relieved by mercury. For this a
thousand whimsical caufes were afligned, the most common
of which was, that mercury was its antidote. This no one
could doubt, but did such an effeétion do more than aflign
a word where we were looking for an action? At length
Mr. Hunter shewed, that this also was perfectly confident
with what had been before obferved; namely, if the venereal
ulcer is the effeét of an action arising from the irritation
of a specific substance, the cure must be effected by the
ufe of another substance, the effeét of whose irritation
would be greater than the irritation excited by venereal
matter; and the manner in which the disease always yields
to the remedy, confirms the doctrine. For no quantity
of this antidote, as it is called, will produce any effeét on
a venereal ulcer, unless an excitation is induced greater
than the venereal; that is, if the chancr is recent, a very
light mercurial irritation will be fufficient to alter its action;
if more irritative, the mercurial irritation must be excited
proportionally higher, and be longer continued.

It may at first feem that we have gained little, inasmuch
as we have now a more fevere diseafe than before. But it
will readily occur, that the parts themselves are capable of
forming venereal matter, which is the caufe of the first irri-
tation, and which will continue till the action excited by that
irritation is fuperfeded. But the parts are not capable of
forming mercury, by which the fecond irritation is induced;
we might therefore expect, as actually happens, that when
the ufe of mercury is fuperfeded, the action excited by it
would gradually ceafe also, and the parts be reftored to
their original or healthy action.

But other difficulties remained. After the ulceration of the
facets was perfectly healed, it sometimes happened, at un-
certain periods, that the throat, the skin, or the bones, or
all of them, would fhew diseased actions, which, though very
different from those on the genitals, were equally incurable
without the remedy; and which, from their uniformity in fo
many subjects, whether during the primary symptoms, or
after they were healed, evidently arose from the fame cause.
The ignorance of former practitioners induced them to
fufpect that thefe symptoms of confirmed pox, as they were
called, arose from an inflicted ufe of the remedy when the
chancr was healed. Yet it was impossible they should
be ignorant, that in many instances in which but comparative-
lily little mercury had been ufed, none of thefe symp-
toms on dilatent parts of the body had occurred; and in
other parts in which the mercury had been ufed to a very
great excess, the patient had been a fecord or a third time
affected, though always in different parts, and with local
complaints, different from primary ulcers, yet arising from
a similar cause. Besides, if the disease occurred from the
want of a fufficient ufe of mercury, how did it happen that
the parts first affected should remain found, and parts not
previously fhewing any diseased action, should now become
in a state of open ulceration?

To account for this, Mr. Hunter shewed, that though it
is now well afserted, that mercury will with certainty
cure every form of the venereal disease which we can
detect; it does not follow that it will cure it before fuch
an action has commenced, as vinceis itself by fome alteration
in the texture of the part; in other words, that it will fuper-
fede the venereal action by its higher irritation; but in order
to do this, the venereal action must have commenced.
But it is urged, that doubtles the venereal action has com-
enced before we can trace it by our fenfes, and that there-
fore mercury ought in this flate to fuperfede it, and to
prevent its arriving at open ulceration. In anfwer to that,
Mr. Hunter produces his facts, and shews that when the
action has appeared, it invariably yields to mercury, and
never appears again from the fame fource of infection in the
fame order of parts. He taught us alfo what is now
universally admitted, that in the skin and throat it is always
curable by a much flichter course of mercury, than was
necessary for curing the primary chancr. Confequently, if
mercury could prevent the venereal action in thefe secondary
parts, the firft course would prove fufficient for that purpofe.
But the concurrent testimony of all the best writers goes to
prove, that none of them knew when to expect nor how to
prevent the appearance of the disease in more distant parts of the body, after it had been cured in the parts first affected; yet all knew how to cure it when it appeared in those distant parts. Boerhaave fancied he had discovered the cause of these difficulties, by comparing the solid texture of the bones with the more yielding condition of the softer parts. Both he and Dr. Swan were sensible how easy it was to cure the disease when it occurred in the skin and throat; but, as honest men, they were forced to confess their incapacity to prevent it, or even after they had cured it in those parts, to prevent its re-appearance in the bones, though in them also they could cure it with equal certainty after the diseased action had commenced.

An accurate attention to all these events induced Mr. Hunter to construct a series of experiments, by which he might ascertain the laws which govern the actions excited by this poison, and thus meet all the difficulties of former writers. His first object was to fix the precise character of the chancre, or primary venereal ulcer. Having done this, he watched, by every possible means, those cases in which secondary symptoms occurred, and was convinced that it did not depend on any causes which could with certainty be controlled. This he urged was not different from many other morbid poisons. In inoculating for small-pox, no one can ascertain whether the patient will have pustules beyond the spot inoculated. Had he lived to witness the effect of cow-pox, he would have found a still more striking analogy. It is well known that secondary vehicles from cow-pox, that is, a cutaneous eruption usually fourteen days after inoculation, and some few days after the inoculated part has scabbed, will sometimes appear at distant parts of the body; but we have no means of ascertaining under what circumstances these secondary eruptions occur, nor of preventing them, nor of producing them.

The conclusions drawn by Mr. Hunter were, first, that from every local action arising from a morbid poison, absorption takes place; secondly, that the absorbed virus circulating with the blood, and is ejected at some of the emunctories, probably the skin; thirdly, that for the most part it passes without contaminating any part in its pittance; but that sometimes the throat, or the skin, or the bone, or all three are contaminated. In these cases the parts thus contaminated take on the diseased action at certain periods, according to the nature of their structure, and the property of the morbid poison; for it is well known that, if any, morbid poisons produce their effect, till a certain period after their application. The small-pox effluvia are received usually from ten to fourteen days, before the diseased shews itself; and the effect then commences on the face several days before the lower extremities exhibit any pustules. Under inoculation, the pustules on distant parts of the body appear at periods later than on the inoculated parts. But though every morbid poison requires a certain period between its application and the effect produced, and though this period is different in different morbid poisons, yet there is a medium in each; and Mr. Hunter ascertained, that the medium for the appearance of the secondary symptoms of syphilis is usually on the skin or throat, six weeks after the cession of the irritation excited by the mercurial douche which cured the primary disease or chancre; that the appearance on the bones is usually three months after the same event; and that if the patient remains well longer than those periods after the healing of the chancre, he may for the most part consider himself free from any further danger from that source of infection. It must be admitted, that these periods are not always precise; but the same may be said of the small-pox, cow-pox, and other morbid poisons; and when we consider that the medium in one instance is from ten to fourteen days, and in the other from six weeks to three months, it must follow that the variations in each are not greater than their comparative medium would lead us to expect.

From these facts Mr. Hunter improved the practice in this disease so much, that we are often led to believe the disease itself to be milder than heretofore. But the truth is, that we now have some method in directing our treatment, which till his time could hardly be said to be the case. It was known, indeed, that mercury would prove a cure; but neither was the character of the disease accurately ascertained, nor the laws by which it yielded to the remedy, nor to which the secondary symptoms were imputable. Hence mercury was indiscriminately applied to all ulcers on those parts, and many were greatly exasperated by it; and as in the true disease secondary symptoms sometimes occurred, the patient was overwhelmed with a disgusting and deleterious remedy, to prevent what could not be prevented, though it rarely occurred; and when it did occur, was readily cured. But the mode of treatment was far from being the only advantage of Mr. Hunter's discovery. By ascertaining the laws of the disease, he relieved the practitioner from every embarrassment, when secondary symptoms occurred; and the patient from the perpetual dread of an evil, from which it was supposed neither he nor his offspring were ever secure.

It is not to be wondered if the obscurity of Mr. Hunter's mode of writing on a subject familiar to himself, but new to every reader, for a long time precluded the world from the benefit they have since derived from his discoveries. For this benefit we are indebted to Dr. Adams, and perhaps to those writers who attempted to controvert the doctrine itself. The latter were very numerous, and, as often happens, few were acquainted with the subject they opposed. Dr. Adams explained the difficulties principally by shewing the errors of his master's antagonists, and at this time we believe the doctrine is universally admitted by all those who take the trouble to study it. That is, that the antitodal property of mercury conflicts in the high irritation it excites; that no ulcer on the genitals is syphilitic, unless it continues to spread with a hard edge and base; that it is useless to give mercury in order to prevent the secondary symptoms of the disease, either in the skin or bones, though that remedy will always cure them, if they should appear; and that if these secondary symptoms do not appear before a certain period after the primary ones, there is no reason to apprehend their appearing at all, unless the patient exposes himself again to the same cause. Such is the general doctrine of Mr. Hunter, divested of certain expressions, by which action is with more technical precision distinguished from disposition. As this language is not necessary we have not introduced it, but refer such of our readers as wish to be acquainted with the precise terms of the discoverer, to the article Lues Venerea.

Dr. Adams has carried one of Mr. Hunter's opinions somewhat further than the inventor. Mr. Hunter had observed, that after the venereal action of the primary ulcer was superseded by the mercurial irritation, new flesh would sometimes arise, but that it rarely happened that such new flesh would regularly cicatrize or heal. His commentator shewed that this was not peculiar to this disease, but extends to all morbid poisons; that in the small-pox and cow-pox it produces the pitting from the first; and that in all other morbid poisons where there is a loss of substance, that loss is never restored by the common means.
VENERY is used for the act of copulation, or coition, of the two sexes.

It takes its name from Venus, the supposed deity of the passion of love.

VENERY also denotes the art or exercise of hunting wild beasts; which are also called beasts of venery, and beasts of the forest.

Such are the hare, hart, hind, boar, and wolf. See BEAST, GAME, and HUNTING.

VENESCATION, in Surgery, the operation of opening a vein, for the purpose of taking away blood for the relief of diseases. See BLEEDING.

VENESS, in Geography, a cape on the S.E. coast of the island of Eady. N. lat. 59° V. W. long. 2° 38′.

VENETA BOLUS, a fine red earth used in painting, and called in the colour-shops Venetian red. See Red.

It is improperly denominated a bole, being a genuine species of red ochre. It is of a fine bright, and not very deep red, approaching, in some degree, to the colour of minium, or red-lead, and is moderately heavy, and of an even and smooth texture, yet very friable, and of a dusty surface: it adheres firmly to the tongue, is very smooth, and soft to the touch, easily crumbles to pieces between the fingers, and very much stains the skin in handling. It has a flight astringent taste, efficaciously considerably with aquafortis, and in water immediately breaks into a fine powder.

It is dug in Carinthia, and sent from Venice into all parts of the world, being an excellent colour, and very cheap; our colourmen, however, find too many ways of adulterating it. Hill and Da-Cola.

VENETI, in Ancient Geography, a people of Italy, in Venetia, of Celtic origin. According to some historians they were the descendants of a colony of Trojans, who came to establish themselves here on the ruins of their own country; but Herodotus says that they were an Illyric nation.—Alfo, a people of Gallia Celtica, in Armorica, who inhabited the peninsula above the Namnet, according to Caesar (De Bel. Gall. lib. iii. c. 8) who ascribes to them the glory of being the most powerful of all the people who inhabited this coast, and who avoided themselves of their shipping, and of the science and practice of navigation. Ptolomy calls their capital Dariorium. Caesar denominates their territory Venetia, although the Veneti, who inhabited that province of Gaul which is now called Britain, excelled, as Caesar says, all the nations on the continent in their knowledge of maritime affairs, and in the number and strength of their ships; yet, when they were preparing to fight a decisive battle against the Romans by sea, they asked and obtained auxiliaries from Britain; which they certainly would not have done, if the Britons could have afforded them only with a few wicker-boats, covered with skins. It is therefore probable, that the people of Britain had ships much of the same form and construction with those of their friends and allies the Veneti, with which they joined their fleet on that occasion. The ships of the Veneti are described by Caesar as very large, lofty, and strong, built entirely of thick planks of oak, and fo solid, that the beaks of the Roman ships could make no impression upon them. The combined fleets of the Veneti and Britons, in the famous sea-fight off the coast of Armorica, now Brittany, against the Romans, consisted of two hundred and twenty of these large and strong ships, which were almost all destroyed in that unfortunate engagement; by which the naval power both of Gaul and Britain was entirely ruined. This great disaster is believed, by some of the best of our antiquaries and historians, to have been the reason...
reason that the Britons never attempted to make any opposition to Caesar by sea, when the very year after it he invaded their country.

VENETIA, a country of Italy, which commenced E. of Gaul, near the lake Benacus, and the river Mineius, which flowed from it. Its boundaries to the N.E. were not very distinctly ascertained. Its principal rivers, beside the Po, were the Atheis, the Medoacus Major, and the Plavis. It was very fertile in pasture, and furnished excellent horses. The people were denominated Veneti or Heneti. Their principal towns were Hadria, Attele, Patavium, Verona, Vicentia, Altimin, Tarvisium, &c. See VENICE.

VENETICE, INSULA, or VENETORUM INSULA, comprehended, under this denomination, a great number of islands situated on the western coast of Gallia Celtica or Lyonensis. This general appellation included Belfile, Houat, Hedie, Gron or Groniais, now Quiberon. These islands occupied that part of the sea which was opposite to the continent inhabited by the Veneti; which fee.

VENETICO, in Geography, a small island in the Mediterranean, near the coast of the Morca. N. lat. 26° 41'. E. long. 25° 53'.—Alfo, a small island in the Grecian Archipelago, near the S. coast of the island of Scio.

VENETORI, a town of Walsachia; 24 miles W. of Buchareft.

VENETUS LACUS, in Ancient Geography, the name of one of those two lakes, which the Rhine formed near its source in the Alps. The lake now called Boden-fee, or more commonly the lake of Conflance, is called "Brigantium" by Pliney, and "Brigantia" by Ammianus Marcellinus. Strabo affigns to it 300 statia of length, and 200 of breadth. Its name Boden-fee is derived from a place called Bodman, situated at the extremity of the lake opposite to which is Bregenz, whence the appellations Brigantia and Brigantium.

VENEV, in Geography, a town of Russia, in the government of Tula, on the Ofer; 40 miles N.N.E. of Tula. N. lat. 54° 20'. E. long. 38° 14'.

VENEW. See VENICE.

VENEZIANO, ANTONIO, in Biography. Of this early painter the birth-place is not exactly known, as he is by one author supposed to have been a Venetian, and by another a Florentine. His principal works are at Pisa and Florence, and in the Ducal palace at Venice. He certainly improved upon the fyle of those painters who preceded him, if we except Giotto; his manner was less formal, and he is said to have painted well in fresco, and to have carried the management of it to a considerable degree of perfection. He died in 1384, at the age of 74.

VENEZIANO, DOMENICO, was born at Venice in 1429, and was a disciple of Antonio da Meffina, after he had, as Valari relates, learned the secret of oil painting from J. V. Eyck: and to him Meffina communicated his secret. He painted several pictures at Loretto and Perugia, and afterwards settled at Florence; where the novelty of his manner, and the ability with which he executed it, acquired for him considerable renown. Unfortunately for him, he formed an intimacy with Andrea Callagno, an eminent Tucan painter, and taught him the management of oil colours; when his treacherous friend conceived the horrid design of assassinating him, that he might remain sole possessor of the secret, and effected his detestable purpose in 1476, when Domenico had attained his 56th year.

VENEZIANI, ANTONI, a Sicilian poet, was born in 1543, at Monreale, and acquired great celebrity in science and polite literature, so that it was fashionable to cultivate acquaintance with him; and amongst those who fought this honour was Tasso. In 1578 he was taken, on a voyage to Rome, by an Algerine corsair, but redeemed; on his return to his native country, he was imprisoned under a suspicion of being the author of some writing against the viceroy of Sicily, and being confined at Palermo, he was destroyed in the castle by the explosion of a powder-magazine in August 1593. His writings consist chiefly of sonnets and lyric poems in the Sicilian dialect; and some of his compositions in pure Italian were printed at Palermo in 1572. A large collection of his Sicilian poems exists in MS. Gen. Biog.

VENEZUELA, in Geography, a province of the easter part of Terra Firma, or of Spanish America, included within the jurisdiction of the captain-generalship of Caraccas, which is not only the capital of this province, but the metropolis of the captain-generalship, the seat of the royal audience and of the intendancy, whose authority extends over the provinces of Venezuela, Maracaibo, Varinas, Camana, Guiana, and the island of Margarreta; extending from N. lat. 12° to the equator, and from 62° to 75° long. W. from the meridian of Paris. The name of Venezuela, which is in Spanish a diminutive of Venice, was given to this province on account of some Indian villages, which the first conquerors found on the lakes of Maracaibo. Others have erroneously ascribed the origin of this name to the following circumstance; viz. that Alphono Ojeda, having landed here in 1499, caused some huts to be constructed upon poles, in order to elevate them above the flagrant water which covered the plain; but though it is true that Ojeda, in 1499, visited the easter shore of Terra Firma, he never thought of erecting any huts over its flagrant waters. The chief place of the province of Venezuela has never been nearly on a level with the water. Caraccas is at least sixty toises above the level of the sea, and has no other water besides that of three brooks which pass rapidly through it, and of a small river which bounds it on the south. The first settlement of the Spaniards on the borders of the lake of Maracaibo took place in 1527. The population of Venezuela, including Varinas, conflated, in 1801, of 500,000 persons; that of the government of Maracaibo, of 100,000; of Camana, 80,000; of Spanish Guiana, 54,000; and of the isle of Margarreta, 14,000; making a total, according to the statement of Depons, of 728,008. The population of Caraccas, in 1802, is stated at from 41,000 to 42,000, consisting of whites, slaves, freed persons, and very few Indians; the first class forming nearly a fourth of the whole, the slaves a third, the Indians a twentieth, and the freed persons the rest. All the whites are either planters, merchants, military men, priests, monks, or persons employed in the administration of justice or finance. In this population, the whites are computed at two-tenths, the slaves at three, the defendants of freed-men at four, and the Indians compose the remainder. A late writer, professing himself a "South American," in his "Outline of the Revolution in Spanish America," (1817), says, that in the town of Caraccas alone there were 45,000 inhabitants; and the whole population of Venezuela, including the several provinces above enumerated, amounted in 1811 to more than 800,000. The foil of Venezuela is fertile, and yields, with prodigious liberality (says Depons), all the productions which are to be met with in the West India islands, besides many others which they do not possess. If a man labour, he must grow rich; and if he vegetate merely in idleness and sloth, he has only to flit, in order to gather from the soil more than sufficient to satisfy the wants of nature. The cacao of this province is abundant and excellent. It likewife furnishes
nilies Indian corn, indigo, tobacco, cotton, sugar, and coffee. Its vanilla, produced from a creeping plant, which, like the wild vine and ivy, entwines round the trees, is obtained in great plenty. Wild chilli is also the product of this country, and with due cultivation, it might be made to furnish a variety of woods, banks, and plants for the dye; and also gums, resins of balsam and medicinal oils; its farfaparilla is said to be as good as the whole of Europe; theaffras and liquorice abound; squills are plentiful; so are likewise florax, calia, aloes, &c. The horned cattle, affording the article of exportation (hides), the horses, mules, sheep, and deer, are here very numerous. It abounds in all kinds of game, and its rivers and lakes supply plenty of fish.

In order to give a brief account of the revolution that has lately taken place in this province, and in other parts of Spanish America, we shall trace the origin and progress of the Spanish establishments in this part of the world. Terra Firma was discovered by Christopher Columbus in 1498, in his third voyage from Spain to America. After having discovered the gulf of Paria, he coasted along Terra Firma as far west as the Teltigo islands, from which point he failed with a fair wind to St. Domingo. Ojeda obtained permission from the Spanish government to pursue the discovery; and having arrived at the territory of Maracapana, in the year 1499, he followed the coast as far as Cape de la Vela, entering several ports in order to collect more minute information. From Cape de la Vela he failed for St. Domingo, according to Oviedo and Robertson; but according to Charlevoix, he returned before that to Maracapana, a village upon the coast of Guatimala, and there had a brig built. Not long after, the account which Columbus had given to the Spanish government attracted to Terra Firma another vessel from Spain, whose real object was commerce, but which concealed its design under a permission from the king to prosecute the discovery of the country. This vessel, commanded by Christopher Guerra, touched on the coast of Paria, at Margareta, Cagua and Cumanagotl., now called Barcelona. In these places, in exchange for trinkets, he obtained a great quantity of pearls, gold, Brazil wood, &c. of which he formed a very rich cargo. Guerra pursued his course along the coast of the westward, and landed only at Coro, where he found, to his great astonishment, some Indians, as much disposed to take away from him whatever he had got, as those on the eastern coast had been given to them. He had too much to lose to run the risk of a war, by which neither glory nor enrichment was to be acquired. He, therefore, wisely took the resolution of returning to Spain, in order to place his riches out of the reach of danger.

The report of his arrival and fortune spread over the whole kingdom, and immediately from every part expeditions were fitted out for Terra Firma. At the same time, Charles V. gave permission to make slaves of the Indians who would submit or embark the conquest; a grant so much the more deplorable to humanity, as it strongly excited the avarice of those in whose hands men shipped the place of every other consideration. It is easy to imagine, that upon those coasts, where pilage had nothing to fear either from the vigilance of the magistrate, or the sword of justice, there must have been established a nefarious commerce which had no other object than inhuman avarice, no other reft but rapacity, tyranny, and ferocity. The crimes committed by that swarm of robbers, who contended with one another for superiority in feats of plunder, were so great and so numerous, that the cries of the victims reached the audience of St. Domingo, who are entitled to our applause for having immediately taken measures to make it appear to the inhabitants of the new world, whom they wished to lead rather than to drive into obedience, that the enormities of that scene of the Spanish nation were not properly chargeable on the nation itself. The audience sent thither, in quality of commissary and governor, a man of very great merit, named John Ampues, who arrived on the Coriana coast in 1527, with sixty men. His mildness, affability, and knowledge soon gained the confidence of the cacique of the Coriana nation; and a solemn treaty confirmed the union and alliance which they formed, and the cacique took the oath of allegiance and vassalage to the Spanish monarch. On the 26th of July, 1527, Ampues laid the foundation of Coro. Thus the province of Venezuela had the pleasing prospect of arriving, without commotion, to a degree of prosperity which would crown the happiness of its inhabitants. However, the commercial house of the Weflers, established at Augsburg, being considerably in advance to Charles V., the emperor submitted to the demand which they made of granting to them, under the title of an hereditaryief of the crown, the province of Venezuela, from Cape de la Vela as far as Maracapana, with the right of extending indefinitely towards the south. But the province having suffered much from the monopoly and tyranny of the agents of the Weflers, the treaty with them was rescinded, and the emperor appointed as governor the licentiate John Peres de Tolotla, who, according to Oviedo, had likewise the title of captain-general. This new reform produced a favourable change in the fylum and mode of conquest; and it was an established point, that instead of committing devastation, the conquerors should farm settlements; and instead of plundering, respect property. Laws, which had been enacted in 1526, 1542, 1550, and 1552, were put into execution. These laws declare the Indians to be free, not even excepting those who should be taken prisoners in the act of bearing arms. As soon as an Indian nation was subjected to the Spaniards, a convenient fite was chosen on which to build a town, for the better security of the conquest. One hundred Spaniards formed the population of the new city, to which a cabildo was attached. They afterwards divided the city in portions among the new inhabitants, according to their rank and merit; and after having made an enumeration of the Indians, they shared them among the Spaniards, who thus acquired over them a right, not of property, but of superintendence. This is what is called "Provinciamiento de Indios," the dividing of the Indians. This measure was followed by more fixed regulations, under the name of "encomiendas;" the effect of which was to place under the immediate superintendence and authority of a Spaniard, exemplary for his morals, the Indians who lived within a limited extent of ground, corresponding to that of the communes in France. In return for these attentions, the Indians were to pay the commisioned superintendants of the encomiendas, who were called encomenderos, a yearly tribute in laurour, fruits, or money. When this tribute was once paid, the Indians were exempted from every other personal service. It appears that, according to the solemn and special contract entered into between the kings of Spain and the conquerors, encomenderos, and settlers in Spanish America, politically divided by the Spanish government, and comprehending the vicerealties of New Spain or Mexico, Santa Fe de Bogota or New Grenada, Peru, Buenos Ayres, or the provinces of Rio de la Plata, and the captain-generalships of Guatemala, Venezuela, and Chili; these last were to remain lords of the country, on the basis of feudal vassalage, under the names of "encomenderos." Such, however, was the inhuman conduct of the first of these towards the natives, that Charles V. and his successors were under the necessity of
of gradually abolishing many of their privileges, and the "encomiendas" fell at length, in most of the provinces, to the crown; and certain inferior privileges were then granted to the settlers, in lieu of those originally poissified, with the titles of marquis, count, &c. Spanish America was from that time considered as a kingdom, independent in itself, yet united to Spain, as being both under the government of one king. The incorporation of this country to the crown of Castile was decreed by Charles V. in Barcelona, September 14, 1519, and confirmed by Donna Juana, Philip II., and Charles I. Accordingly, in the opening of the royal decree published in the year 1524, for the nomination of a supreme council for the Indies, the term kingdom is expressly used, and its use admits, that the habitants had a natural right to hold the appointments of profit and honour in the country. The energetic remonstrances of Montefino, Cordova, Las Cañas, and others, to the court of Spain, against the arbitrary measures of the conquerors and settlers, gave rise to the establishment of the Council of the Indies. (See Council of the Indies.) Whilft the legislative power of the kingdom of the Indies rested in this council and the king, the executive power belonged to the viceroy and captain-general. The viceroyos were also invested with royal power, that is, they were authorized by a special commission to act with plentitude of power in extraordinary and delicate emergencies.

From the most exact calculations, it is concluded that the continental part of Spanish America contains thirteen millions of inhabitants; part of which population is employed in agriculture, particularly in Venezuela, Guatamala, Guayaquil, Chili, Caraguatenga, &c.; and many in the care of cattle, especially in the provinces of Rio de la Plata and part of Venezuela; while the habitants of several provinces of Mexico, Peru, and New Grenada, are almost wholly employed in working the mines. The Indians and Negroes have retained, in a great measure, their primitive customs; the Creoles have received theirs from the Spaniards. The Catholic religion being that of Spanish America, the church-government and ecclesiastical dignities are the same in the mother-country. The inquisition was also established in the new continent: all access to the Spaniach settlements was not merely closed against foreigners, but even the habitants of the different provinces were prohibited from intercourse with one another. Commerce was exclusively carried on with Spain, and was almost entirely in the hands of Spaniards; about the end of the last century, however, some special licences were obtained from the viceroyos and captains-general to trade with the Antilles, when communication with the mother-country was very difficult; and in 1797 the court of Madrid was obliged to allow some of the ports of Terra Firma to be opened for the advantage of commerce. Urged by similar motives, Ciferos, the viceroy of the provinces of Rio de la Plata in 1809, opened the ports of Buenos Ayres, that a free trade might be carried on with the nations in alliance with Spain.

The court of Madrid long maintained its power in the new continent, by a small number of Spanish troops, as the Creoles were cordially attached to the mother-country, and the Indians unable to free themselves; but about the middle of the last century, a plan of conspiracy was formed in Caracas, with a view of destroying the company of Guipuscoa, to which the privilege had been granted of exclusively trading with Venezuela. The design was discovered, and the head of the conspiracy condemned to death. (See Caracas and Guipuscoa.) The oppressions of the repartimientos, and other grievances, gave rise also to the insurrection which took place in Peru in 1780. By the system of the repartimientos, the Indians were obliged to receive their necessary supplies of goods, hardware, and mules from the corregidores (officers named by the king), at the prices they fixed, and on the credit they thought proper to give. In 1781, some reforms and additional taxes were introduced in New Grenada, in the province of Socorro, one of the most populous of the vicereignty; but the province openly declared against these changes, and having assembled near 17,000 men, marched against Santa Fé de Bogota, exclaiming, "Long live the king, but death to our bad governors."

Some few Creoles and Spaniards, well acquainted with the principles laid down by the French politicians in the early period of the French revolution, and with those of the writers who preceded that period, formed a plan for revolution in Caracas in 1797. They treated the Spanish government with contempt, and trufed to the protection of the English, in consequence of Mr. Pitt's well-known plan of giving independence to Terra Firma. The conspiracy was discovered, and the infamous leaders made their escape; but one of them was afterwards apprehended and hanged. Sir Thomas Picton, governor of Trinidad, staled at this time a proclamation, in which he says, towards encouraging the habitants (of the continent near to Trinidad) to refit the oppressive authority of their government; "I have little more to say, than that they may be certain, that whenever they are in that disposition, they may receive all the favours to be expected from His Britannic Majesty, be it with forces, or with arms and ammunition to any extent; with the assurance, that the views of His Britannic Majesty go no further than to secure to them their independence, without pretending to any sovereignty over their country, nor even to interfere in the privileges of the people, nor in their political, civil, or religious rights." To affit the revolutionarv party in Spanish America, the English cabinet is said to have paid the expedition of Miranda to Venezuela in 1806, and to have lent that of Whitelocke to Buenos Ayres in 1807, both of which failed. It is certain that the inhabitants of Spanish America have been long discontented, and that they have complained of various grievances to the court of Madrid. This court, however, knew how to answer petitions without redressing grievances. But Napoleon Bonaparte, when he became in fact master of the Peninsula, and possessor of the wealth of America by the influence he had in this court, having invaded the kingdom and seized the royal family of Spain, loosened those bonds which united the new to the old world, and gave rise to a revolution which, from the wide extent of the country in which it is fested, its character, and its confquences, is unparalleled in the annals of history. When Bonaparte had not only invaded the kingdom, but seized king Ferdinand, and assemblies under the denomination of "juntas" were established in various provinces of Spain, each assuming in its respective district the supreme authority, the Spanish Americans were perplexed and dubious as to the conduct which they ought to pursue. The moment for freedom seemed at length to present itself, after they had been weary and exhausted by a series of sufferings for three centuries. However, Spanish America was still attached to the mother-country: and when it was announced at Caracas, in July 1808, that Joseph Bonaparte had taken possession of the Spanish throne, the city was immediately in arms: 10,000 of its inhabitants surrounded the residence of the captain-general, and demanded the proclamation of Ferdinand VII. as their king: which he promised to do next day. But such was their ardour, that they proclaimed him that evening by heralds in form, throughout the city, and placed his portrait, illuminated, in the gallery
of the town-house. Some months after this wonderful display of attachment to the mother-country and its sovereign, many respectable families of Caracas concurred in presenting a petition to the captain-general, Cajas, for permission to elect a junta similar to those in Spain. The petitioners indeed were arrested; but after a confinement of very few days they were released. About the end of July, 1808, Liniers, viceroy of Buenos Ayres, received intelligence of the events that had occurred in the Peninsula; and in a proclamation addressed to the people, he exhorted them, in the name of Bonaparte, to remain quiet. Xavier Elio, the governor of Monte-Video, accosted him of disobliged and thus separated the country under his command from its allegiance to him, by forming a junta resembling those of Spain.

The news of the general insurrection in Spain reached Mexico on the 20th of July, 1808; and a junta was immediately established. La Paz, which was the capital of one of the districts under the dominion of the audience of Charcas, considering Spain too feeble to free herself from the power of the French, wished to provide for its own security; and, in the beginning of the year 1809, formed a government for itself, composed of many respectable persons, which was styled "junta intituticia." The viceroy of Buenos Ayres sent an army to oppose this motion; and Goyeneche marched, by order of the viceroy of Peru, against La Paz, who succeeding, ordered numbers of the patriots to be ignominiously and cruelly executed. Quito, nevertheless, capital of the audience bearing its name, established a separate government, August 10th, 1809. But the viceroy of Santa Fe de Bogota halted to destroy the junta of Quito by force of arms; and Abascal, the viceroy of Peru, did the same. The defenders of the junta were obliged to yield to superior force, receiving a promise from the Spanish president of Quito, that all events should be forgotten. But regardless of this promise, many patriots, amounting to more than 300, were murdered in cold blood. In 1810, the junta of Caracas commemorated the fate of these victims with funeral honours equally magnificent and solemn. Upon the dispersion of the central junta in Spain, and an illegal election of a regency, the inhabitants of Caracas resolved to try to obtain by force what reasonable representation had failed to gain for them. The municipal body, in conjunction with many persons named by the voice of the people, assumed the reins of government, and the appellation of "junta suprema." The acts of the junta were published in the name of king Ferdinand VII.

The establishment of the junta of Buenos Ayres was effected with more tranquillity than that of Caracas. A junta was formed at Chile in September; and disaffection, occasioned in Mexico by violent measures, produced an insurrection, September 16th, 1810, in the town of Dolores, near Guanajuato; which insurrection soon extended through the whole country.

When the council of regency received intelligence of the proceedings at Caracas, by the which the inhabitants declared themselves independent of the mother-country, and determined upon forming a governing junta to execute this toppled independent authority, it resolved to adopt vigorous measures for preventing the progress of this evil; and, for this purpose, consulted the council of Spain and the Indies. Accordingly the regency declared the province of Caracas in a state of rigorous blockade. The measures thus adopted evinced the prevalent spirit that actuated the Spanish Americans, though the different provinces were not acting in concert with each other. War seemed to be the wish of the merchants of Caracas, and of the Cortes that had been assembled by the regency; and various methods were used to excite and encourage it. Its long continuance, and the savage manner in which it is prosecuted, evince the irreconcilable animosity of the contending parties. "The Spaniards fight for reconquering their once poffessed territories, and the Spanish Americans to obtain independence: the first are cruel in the hour of triumph, and with aversity their enmity increases; the latter are courageous in attack, and, when defeated, ready to place confidence in their leaders, and to rally under their banners. The first posseffes great military skill; the latter, superiority of number. Both have uniformly shewn a firmness and decision in action suited to the high objects they have in view, and to the great obstacles they have to overcome. In these contests, the blood of thousands has already inundated an extent of country of more than 1500 leagues, which comprise the Spanish settlements in the new continent; and as the mortality in the field of battle were not sufficient, numbers are daily murdered in cold blood."—"The Spanish chiefs and rulers, it is said, gave the first example of violating capitulations, of shooting prisoners, and of refusing all means of accommodation, in the cruel war carried on in the new continent, by the authority of the Cortes of Spain, and by Ferdinand VII. The old Spaniards of either world will be altogether unable to find an excuse, or even a palliation, for their want of humanity, and breaches of faith, since the beginning of the revolution. The cruelty of the Spanish chiefs, and tokens of approbation on the part of the regency and cortes, have exasperated the newly-formed governments in Spanish America, and given strength to their decisions. At first the revolutionary spirit was confined to very few persons, but it soon spread through the whole continent.

This sufficiently appears in the spirit and language of the act of independence published by the congress of Venezuela on July the 5th, 1811. Similar declarations to those of the congresses of Venezuela were made in Mexico, and in Carthagena, Socorro, Tunja, Pamplona, Antioquia, and the other provinces, which composed the federation of New Grenada, and more lately by the congress of Buenos Ayres."

When king Ferdinand, in his decree of the 4th of June, 1814, announced to the South Americans his return to his country, he ordered that they should lay down their arms; and this order was enforced by an army of 10,000 men, equipped at Cadiz, and placed under the command of Morillo. This army appeared on the coast of Venezuela in April, 1815. All hopes of reconciliation were now abandoned, and a revolt in Spanish America against Ferdinand VII. may be dated from this period. From Campano general Morillo proceeded to Margarita, and from thence to Caracas; and in the following August he besieged Carthagena. Although diffentions had occurred between Bolivar and Castello, both commanders of the South American forces, and leffened the means of defence which Carthagena possessed, the inhabitants, nevertheless, supported by nearly 2000 regular troops, prepared for a vigorous retaliation. But provisions failed, and more than 3000 persons died of famine. On the 5th of December, 1815, the governor and garrison of Carthagena evacuated the place, and on the following morning the king's troops entered. General Morillo, thus poffessed of Carthagena, was enabled to conquer New Grenada. He entered Santa Fe de Bogota in June, 1816, and remained there till November. More than 600 persons of those who composed the congresses and provincial governments, as well as the chiefs of the independent army, were shot, hanged, or exiled; and the prorns were full of others waiting their fate.

The first decree of the junta suprema of Caracas, formed April
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April 19th, 1810, contained orders to arrest the captain-general, and the members of the audiencia, who were sent to the United States of America: it was decreed that the alacabala, or duty on selling any commodity, should be abolished, the tribute paid by the Indians, and the slave-trade; that freedom of commerce, agriculture, &c. should be established; and that these political changes should be made public, and communicated to the English government. Juntas were formed for similar purposes in different provinces. The regency of Spain was incensed, and it declared all the ports attached to the new government to be in a state of blockade; and orders were given for reducing Venezuela to its former subjection. When these orders proved ineffectual, spies and emissaries of every description were sent to all parts of Venezuela, for the purpose of effecting a counter-revolution. General Miranda reached the shores of Caracas in the end of 1810, notwithstanding the instructions given by the junta suprema for opposing the return of the general to his native country, with a view of evincing the moderate plan of conduct which the junta had adopted towards Spain. A general congress met, and the plan of a confederation, as the best form of government for Venezuela, was formed and adopted. Miranda, however, opposed it, and his conduct gave offence. In April, 1811, the congress nominated three persons, who were to constitute the executive power, which was very limited. Although several persons were secretly desirous of reunion with the mother-country, they durst not avow it, so carnal were the inhabitants of Caracas for independence. The anniversary of the revolution, on the 19th of April, was kept with great rejoicings. A most alarming conspiracy was just ready to break out in June, 1811, but it was discovered and defeated. In the midst of the prosperity of Venezuela, it was visited, March 26th, 1812, by a most tremendous earthquake, which destroyed nearly 20,000 persons. The towns of Caracas, La Guayra, Marquesia, Merida, and San Felipe, were totally demolished; and Barquisimeto, Valencia, La Victoria, and others, suffered very considerably. At this crisis, general Miranda had the command of the army, and general Monteverde commanded the royalists. Caracas at length fell under the power of the royalists; the republican army was disbanded; and Miranda, with many others, proceeded to La Guayra, intending there to embark for Carthagena. But Miranda was betrayed, and he, with nearly 1000 patriots, were thrown into dungeons at La Guayra and Puerto Cabello. In consequence of this disaster, Cumana and Barcelona acknowledged the authority of Monteverde; and other similar events occurring, the Spaniards refused the authority in Venezuela. Vengeance filled the mind of Monteverde. The Spaniards thought, by destroying the inhabitants of Venezuela, the first province which had shaken off their yoke, to punish in them the infraction of the whole southern continent. Every royalist became a public accuser; every priest was filled with patriotism; and almost the whole population were under confinement. This conduct of the royalists, instead of conciliating, excited the hatred of the inhabitants; and the courage of those who were attached to the cause of independence revived. The province of Cumana first opposed the oppression of Monteverde; and here he was twice defeated. Don Simon Bolivar, one of the most distinguished natives of Caracas, obtained from the congress of New Grenada near 600 men; and with these he felt confident that he should be able to conquer the enemies of his country. Bolivar, after a variety of prosperous adventures, was rapidly advancing towards Caracas, where the inhabitants waited for him, as their deliverer. A junta was assembled, and it was propounded to make proposals of capitulation to Bolivar. The general accepted the offered treaty, and granted leave to any person, who was desirous of it, to emigrate from Venezuela, and to withdraw his property. The articles of the treaty, though they were extremely liberal, were disapproved by the captain-general Monteverde, because it was derogatory to the dignity of the Spanish nation to treat with insurgents. Bolivar made his triumphant entry into the city of Caracas, amidst the congratulations of the inhabitants, on the 4th of August, 1813. The dungeons of La Guayra were thrown open, and those who had suffered a year's confinement were restored to their country and friends; while the people, shouting with joy, blessed their deliverer, at the sight of every individual who rushed from the prisons. In the midst of this popular ferment, none of the Spaniards were insulted. The provinces which formed the republic of Venezuela were again in the power of the patriots; but Monteverde obstinately persisted in refusing to treat with Bolivar. In the mean while, Monteverde received from Spain a re-inforcement of about 1200 Spanish troops; and thinking himself warranted to act offensively, he attacked the republicans, but was completely defeated. Almost all the Spaniards were killed or taken prisoners, and Monteverde himself was severely wounded. After this defeat, Bolivar laid siege to Puerto Cabello both by sea and land. But the royalists retiring into the fortresses, determined not to surrender. Bolivar, in invading Venezuela under the protection of the congress of New Grenada, had received orders to reinstate the republican congress; but this he did not think it advisable to do. Bolivar, however, having given an account of his intentions and operations, in the invasion of Venezuela, to an assembly that had been convened of persons of all ranks, regarded the supreme authority which he held. But the governor of Caracas propounded, and his proposal was agreed to, that Bolivar, denominated the "Libertador de Venezuela," should be invested with dictatorial authority, till the reunion of the provinces of Venezuela to those of New Grenada, under the same representative form of government. The Spaniards, not being able to subdue Venezuela, determined to destroy it. Accordingly the slaves were to be raised in rebellion against their masters. The number of slaves in Venezuela amounted to 70,000; and one of the most formidable emissaries for this purpose was Boves, over whom Bolivar obtained a signal victory at La Vittoria. After gaining several other considerable advantages over the royalists, Bolivar considered himself as secure in the possession of Venezuela; and turned his attention to Coro and Los Llanos, whither the enemy had fled. But as the three divisions of the republican army were separated many leagues from each other, Bolivar was attacked by Boves on a plain called La Puerta, nearly 50 leagues from Caracas, and after many hours fighting, compelled to abandon the field to Boves. Other disasters also occurred, and from this time confusion reigned among the patriots, and there was no longer any army for the protection of Caracas. Success no longer attended Bolivar; his former good fortune had forsaken him, and even the commander of his flotilla, which protected the coast, refused to obey his orders. Despairing of the independence of his country, he and a few of his chosen officers, who were willing to partake his ill fortune, embarked for Carthagena. From Carthagena he proceeded to the town of Tunja, where the congress of New Grenada was sitting; and he was commissioned by the congress to compel by force the city of Santa Fe de Bogota to acknowledge its authority. In this he succeeded; after which he was lent with 3000 men
men to reduce to allegiance the province of Santa Marta. Carthagena was to contribute troops and guns; but it was prevailed upon to refuse the demanded supply, under pretence of Bolivar's ambitious views, and his fanguard career in Venezuela. Bolivar marched against Carthagena; but intelligence having been received of the expedition from Spain having reached this city, Bolivar gave up his plan, quitted the army, and his troops united to those of Carthagena to defend that city. The royalists entered Carthagena about four months after the siege had begun; but in the mean while, Bolivar, who had gone to Jamaica, proposed to assist Carthagena by landing an expedition on her shores. The capture of Carthagena prevented the execution of his plan, and he again turned his attention to Venezuela. Stimulated by the hopes of once flattering prospects, Bolivar planned an expedition for afflicting the efforts of the patriots of Margarita; and joining Borion, an affluent native of Caracoa, assembled the emigrants from Venezuela, and part of the garrison which had evacuated Carthagena. Borion was appointed commander of the maritime forces, which were to be employed on this occasion. Sailing from Aux Cayes at the end of March, 1816, they landed in the beginning of May at La Margarita. From Margarita Bolivar failed for Carapano, about five leagues west of the town of Cumana, of which he dispossessed the royalists; and having armed many of the corps of guerrillas, who had advanced to join him, they failed for Ocmara. When he landed at Ocmara, he issued a proclamation, giving liberty to the slaves. This proclamation, dated July 6th, 1816, does honour to his judgment and feelings. "Your tyrants," says he, "shall be destroyed or expelled, and you shall be restored to your rights, your country, and peace."—"No Spaniard shall be put to death, unless in battle." No American shall suffer the least injury for having joined the king's party, or for having committed acts of hostility against his fellow-citizens."—"That unhappy portion of our brethren, which has groaned under the miseries of slavery, is now set free. Nature, justice, and policy, demand the emancipation of the slaves: henceforward there shall be only one class of people in Venezuela—all shall be citizens."

Bolivar, who after the defeat at Ocmara had returned to Aux Cayes, brought new reinforcements to Margarita, where he landed in December, 1816. There he published a proclamation, convoking the representatives of Venezuela to a general congress; and went afterwards to Barcelona, where he organized a provisional government. In this place he repulsed the royalists under Real and Morales, in February or March, with great loss. Although the patriots lost the town of Barcelona on the 7th of April this year (1817), and the royalist forces in Venezuela received an addition of 1600 men from Spain in May last, it is now (Aug.) reported, that Bolivar has succeeded in completely establishing the republic of Venezuela.—Travels in South America, by Depons, ii 2 vols. 1807. Outline of the Revolution in Spanish America, by a South American, 1817.

VENETIA. See CORO.

VENEGAMBOOR, a town of Hindoostan, in Myfore; 17 miles S.E. of Erroad.

VENEGAPALEAM, a town of Hindoostan, in Myfore; 11 miles N.N.W. of Daraporm.

VENEGOLINA, in Ornithology, an African bird, which seems not to have been described by any of the ornithologists. According to the Hon. Daines Barrington's account, it is of the fuch tribe, and about the same size with our aberdavine, or filkin; the colours are grey and white, and the cock hath a bright yellow spot upon the rump; it is a very familiar bird, and sings better than any of those which are not European, except the American mocking-bird. Phil. Trans. vol. lxxiii. part ii. p. 254.

VENHUYSEN, in Geography, a town of Holland; 4 miles S.W. of Enckhuysen.

VENIA, among our Ancient Writers, denotes a kneeling, or low prostration, to the ground; used by penitents. See GENIAL EXULATION.

Walfingham, p. 196. "Rege interim prostrato in longa venia. Per venias, centum verrunt barbis pavementum."—VENIAL, a term in the Romish Theology, applied to flight fins, and such as easily obtain pardon. In confounding to the priest, people are not obliged to accufe themselves of all their venial fins. The thing that gives the greatest embarras to the Romish caiufala is, to distinguih between venial and mortal fins. See POPEN. The reformed reject this distinction of venial and mortal fins; and maintain, that all fins, how grievous soever, are venial; and all fins, how flight soever, may be mortal: and the reason they urge is, that all fins, though of their own nature mortal, yet become venial, or pardonable, by virtue of our Saviour's passion, to all such as fulfil the conditions on which it is offered in the Gospel. To which the Romanists anfer, that the chief of these conditions is confession.

VENICE, in Geography, a city of Italy, and for a long time the capital of a republic. This city makes a very grand appearance at a distance, as seeming, from its being built on a multitude of islands, to float on the sea; or rather, with its stately buildings and cloisters, as it were, rising out of it. The number of these islands is uncertain: some reckoning 60, others 72, and others again making them amount to 138. The Laguna, or marshy lake, which lies between the city and the continent, and is five Italian miles in breadth, is too shallow for large ships; but, by the attention of the republic, was prevented from becoming part of the continent, and from being ever frozen so as to bear an army. Towards the sea, the access to the city is also difficult; but the safe and navigable parts are indicated by piles; which, at the approach of an enemy’s fleet, can be cut away. Besideas, as a considerable number of galleys and men of war could be fitted out very expeditiously for sea from the docks, which contained vaft quantities of naval stores, the city was strong without fortifications. The fift, caught even at the very doors of the houses, might be reputed a good prefervative againft famine. The return of the fift is sometimes later here than every fith hour, and it generally rises between four and five feet, keeping the water between the islands of the city in continual motion. Some of the canals being very narrow, the mud is not fo effectually carried off as to prevent ill smells in hot weather. The great canal, which winds through the city, and divides it into two parts, is 1500 paces long. The belt way of going up and down the city is in gondolas, which, indeed, like the eye with a mournful appearance, being all lined either with black cloth or ferge, or painted black. Over the severaL canals are laid forty four hundred and fifty (some fay upwards of five hundred) bridges, great and small, and the better part of them flone: the highest and longeft is the Rialto. (See BRIDGE.) The city may, indeed, every where be traversed on foot; but the streets are very narrow, and the free-stone pavement very slippery in wet weather. The many small bridges, with their steps, are also not a little troublesome. The whole city is laid to be fix Italian miles in circumference; and to make the tour of it in a gondola, takes up somewhat more than two hours. Venice contains seveny parifi-churches, besides others, fifty-four convents of
of monks, twenty-six nunnerys, seventeen rich hospitals, eighteen oratories, forty religious fraternities with their chapels, and fifty-three squares. The buildings, indeed, are all of stone; but the greater part mean, without beauty or elegance. St. Mark's square, it is true, is very fine, and so are the several stately marble palaces that border upon the grand canal, though most of them are of Gothic architecture. In the churches and convents, the most admirable parts are the paintings; and indeed Venice, highly renowned for fine paintings, is said, in this very respect, to have surpassed even Rome itself. Venice, from the fertility of its neighbourhood, and the facility of carriage, enjoys a constant plenty. The spring-water being very indiffercnt, almost every house has a ciffern, into which the rain-water is conveyed from the roof, and clarified by being filtrated through sand. Water is also brought from the river Brenta, and preferved in cifferns. Among the diversions of Venice, the carnival is accounted the chief: it usually begins the second day of Christmas, and continues till Shrove-Tuesday; consisting chiefly of masquerades and ridottos: St. Mark's place is the general rendezvous. Other diversions are plays and operas. The trade in cloth, especially scarlet, silk goods, and looking-glasses, is still very considerable. Here also gold and silver flufis are manufacured; which, although not so beautiful as those of France, have a very good face in the Levant. The brocatellas, a kind of stuff like brocade, made of coarse silk, are much used for carbets. Venice is divided into fix parts, called Seiiferie di Seifiera. S. Marco contains the piazzetta di S. Marco, with the adjacent buildings. This square, the pride of the city, forms a right angle, the shorteft side of which, two hundred and forty paces long, and seventy-five broad, reaches along the ducal palace. The ducale palace, towards the water-side and St. Mark's place, is entirely Gothic; but on the side of the small canal, and in the court, of modern architecture, and mostly of marble. It not only served for the residence of the doge, but also for the meeting of the council. The finest ornaments of the council-chamber and other apartments, are the paintings of famous ancient masters. In one side of the palace, towards the canal, Rio di palazzo, were dark prisons, strongly secured with iron grates. The lower gallery, or arched walk, on the side of St. Mark's square, together with the opposite hall, is called Broglio. Here, at a certain hour of the day, the nobles took their walks, and at this time no Venetian of an inferior rank must be seen on it; though a foreigner, as supposed unacquainted with the custom, is not desired to quit the place. Between these two buildings and the piazza were two pillars of Oriental granite, on one of which stood St. Mark's lion in brass, and on the other a marble statue of St. Theodore. Between these is the place for the public execution of malefactors, through which no nobleman is ever seen to pass. A galley, completely rigged and armed, lay close to the Broglio, for the defence of the ducal palace on any sudden emergency. Contiguous to the north part of the doge's palace is St. Mark's church, also filled the doge's chapel. Its materials justly entitle it to be called magnificent, being, both on the out and inside, covered with fine marble; but the architecture is entirely Gothic. The best part of it consists of the Mosaic paintings, and the four braffs horfes, formerly gilt, standing over the great door, and said to have been brought here from Constantinople. In the church treasury is kept a very famous manuscript of the gospel of St. Mark, pretended to be autographical; but the dampness of the place where it lies has spoiled it to such a degree, that no part of it is any longer legible, and it is not fo much as certain whether it be written in Latin or Greek. In the Seiiferia di Castello is the arsenal or dock, two Italian miles and a half in circuit, walled and moated in, with twelve towers along its walls; and within the enclosure a great variety of buildings, in which everything requisite for a land or sea armament is kept in readiness, with shops, storeshouses, and bafions and slips for ship-building, &c. Within it lie the men of war, frigates, galleys, and other vessels, with the Bucentauro, which is also laid up here. In the Seiiferia di Canal Regio is the theatre, and in this quarter the Jews live, to the amount of fifteen hundred, who must wear a scarap of red cloth in their hats, by way of distinction from Christians. Seiiferia ci S. Pavolo contains the exchange, the bank, &c. On the invasion of Italy, in the fifth century, by the Huns, under their king Attilla, and the general defolation that every where appeared, great numbers of the people who lived near the Adriatic took shelter in those islands where now stands the famous city of Venice; and which islands, about the year 421, particularly Rialto, had, in some measure, been built upon by the Palladins, for the advantage of commerce. (See Venetia.) Here having settled their small places or fates, they were at first governed by consuls; afterwards by tribunes; and formed a kind of republic, the council of which was represented by the presidents of these magnificent courts. These islands became still better inhabited by the succeeding incursions of the Goths and Longobardi into Italy; multitudes from Rome and other large cities repairing thither, so that this state became soon able to make some head against these bold invaders. At length the chief of these islands and the Longobardi came to an agreement, by which the former were to remain unmodelled. This was the commencement of the city and state of Venice. About the beginning of the eighth, or end of the seventh century, the former government of these islands was abolished, and an unlimited power conferred on Paulus Anafeto, with the title of duke. Under this sovereignty the state greatly increased, till the people, justly becoming weary of the ills of domestic despotism, chose, in the year 1171, another duke, but curtailed his power, by assigning him a council of 240 persons, composed of commons as well as nobles. Duke Ziani sided with pope Alexander III. against the emperor Frederick, and obtained over him such a signal victory at Sles, that the pope presented him with a ring, which he was to drop into the Adriatic, as a sign of his marriage with, and perpetual sovereignty over it. The Venetians, who had already extended their dominion into Ifiria, Dalmatia, Syria, Lombardy, and other places, made a very considerable acquisition in the beginning of the thirteenth century, by poifening themselves of the principal islands in the Archipelago and Mediterranean, particularly that of Candia. From this time they alone carried on, at an immense profit, the trade for East India goods, which they imported from Alexan- dria, in Egypt, to which place they were brought across the Red seas, and by the way of Suez. Under duke Ma- rio Morosino was introduced the form of electing the doge; and it was at this juncture that jealousy and envy cemented the war with Genoa, which, after continuing 130 years, was at last put an end to by a treaty, in 1591. During this war, duke Peter Grandonigo, in the year 1296, ordained that the nobility alone should be capable of sitting in the grand council. Thus the government became aristocratical. In the 15th century, the Venetians extended their possessions in Lombardy; and, in 1473, the laft king of Cyprus appointed the state of Venice his heir. Towards the end of the 15th century, the Venetian commerce, and consequently power, began to decline, when the Portuguese discovered a route by sea to the East Indies, which opened the trade to all nations. In the 16th century, the pope, the emperor, France, and Spain, joining in a league against them, they
were dispossessed of all their towns and places in the kingdom of Naples, the ecclesiastical state, and the Milanesi. They received another severe blow from the Turks, who drove them out of the island of Cyprus. In the 17th century a sharp contest arose between the state, the clergy, and the pope, in which, however, they had the advantage. They were also long engaged in troublesome wars with the Turks, losing Candia, and gaining part of Dalmatia, and all Morea; but the greater part of these have been lost in succeeding wars. Thus the republic of Venice continued upwards of 1300 years, amidst many foreign wars and intestine commotions. Its grandeur was chiefly owing to trade and liberty; and since the decline of the former, its strength and confluence must have suffered a considerable diminution. The power was lodged in the hands of the nobility, faithful to the state, and to the decree that the council should perpetually consist of the families which then composed it, and some others which it ennobled. This produced a second class of nobility, who, accordingly, were then registered in the golden book. It consisted of upwards of eighty families, and some of great wealth and reputation. With these there were also included families raised to nobility after the Genoese war, on account of their large contributions towards carrying it on with vigour. The third and last class was composed of the Cittadini, or citizens, whose nobility was purchased for 100,000 Venetian ducats, a resource of the republic for raising money in necessitous times. Crowned heads, German and other princes, have not thought it any degradation to be made nobles of Venice. The habit of the nobility, whilst at Venice, was a black furred gown, reaching to their heels, with a belt about three inches broad, and plated with silver. Instead of hats they had long caps. The head of the republic was the doge, or duke, who, on the demise of the former, was chosen in a peculiar manner, by forty-one nobles, selected for this purpose by a process which is needless to describe. The forty-one electors were confirmed by the grand council; and, being shut up in a chamber of the ducal palace, there remained till they had chosen a new doge. To the due and legal election of a doge, it was required, that out of the forty-one he should have twenty-nine votes. His election was followed by a kind of coronation; the ducal cap being placed with great ceremony on his head. This was performed at his public entrance into St. Mark's church. His yearly income was 12,000 Venetian ducats. He was subject to a variety of restrictions; and he was under the inspection and control of the council of ten, who kept a watchful eye over his whole administration, and, at any time, could come and search his most private apartments. In general, his authority, essentially considered, was no greater than that of a private person, unless he could influence the whole council. On his death a formal inquiry was made, whether he had abused his power; whether, from a care of his own concerns, he neglected those of the public; whether he lived agreeably to his dignity, &c. If found guilty of any thing alleged to his charge, his heirs were fined in proportion to the nature of the crime. On Ascension-day, the doge, or, in case of illness, the vice-doge, performed the annual frivolous ceremony of marrying the Adriatic sea. (See Doge.) In the grand council, all nobles of the age of twenty-five years might take their place, though some younger found means to obtain admittance. The senate, or pregadi, were a committee of the grand council, by whom they were also chosen. This senate had the management of the most secret and important state affairs, as the making alliances and peace, declaring war, sending ambassadors, coining money, filling up offices, imposing taxes, &c. Next was the collegium, in which all public instruments directed to the state and doge were read, audiences given to foreign ministers, and other matters of importance transacted. The procurators of St. Mark had not only the inspection of the church of St. Mark, its library, and the records of the republic, but likewise managed all affairs relating to the poor, together with wills, guardianships, redemption of Christián slaves, and bringing over-rogid creditors to a reasonable composition. Their number never exceeded nine: their office was of great authority, and during life; and out of them the doge was generally chosen. Titular or extraordinary procurators of St. Mark were more numerous; the republic gladly filling these titles in a public sacrifice of money. In the consiglio dei dieci was a high penal court, which consisted of ten counsellors, the doge, who was president, and his six consiglieri. The established religion was the Roman Catholic; but Greeks, Armenians, and Jews, were all the public exercise of their worship, and Protestants, observing privacy, remained unmolested. The patriarch of Venice, the chief ecclesiastic of the republic, was chosen by the senate; and though confirmed by the pope, now in all other respects, he is independent of the papal chair. The territories of the republic were under governors chosen out of the nobility, changed at the expiration of a certain term of years. The annual revenue of the republic was computed at 8,200,000 ducats, and was under the direction of three governors dell' Entrate. In war-time, both the nobles and the other subjects, even the doge, contributed, proportionally to their incomes, towards defraying the public expences. The states of Italy subject to the Venetians were the Dogado, the Paduan, the Poleline di Ravigo, the Veronese, the Vicentini, the Breffan, the Bergamasco, the Cremona, the Trevigiano, the Feltrin, the Bellunese, the Cadorna, great part of Friul and Istria; to these may be added a part of Dalmatia, the islands of Corfu, Zante, Cephalonia, and some others. The number of inhabitants in the city of Venice was estimated at 160,000, and of the whole state, at 2,500,000. In the year 1797, in consequence of some partialities which the Venetians showed to Austria, the French attacked and made themselves masters of the city. By the peace of Lunéville, Venice with its dominions was given to Austria; but by the peace of Pressburg transferred to the new kingdom of Italy. In December 1807, prince Eugene Napoleon was created prince of Venice by the emperor Napoleon.

Venice has always been renowned for its cultivation of the fine arts, and for giving birth to great profilers, particularly in painting, architecture, and music. At the head of the first, Titian, Paul Veronese, and Tintoret; of the second, Palladio and Scamozzi; and of the third, Zarlino, Lotti, Marcello, and Galuppi; names that can never be heard without pleasure by the votaries of those arts. Printing, too, has been carried on at Venice with great spirit ever since the year 1459, when it was established there by Nichola
Nicholas Janfen; and in the beginning of the next century, purveyed by the Aldi with more accuracy than in any other part of Europe.

But Venice has long manifested its attachment to music by the establishment of its conservatories, or musical schools, of which it has four; the Ospidale della Pietà, the Mendicanti, the Incurabile, and the Ospidalletto a S. Giovanni e Paolo; at each of which there is a performance every Saturday and Sunday evening, as well as on great festivals. The performers at them all, both vocal and instrumental, are females: the organs, violins, flutes, violoncellos, and even French horns and double-basses, are supplied by these females. See Conservatorio.

Though the composers of the Venetian school are, in general, good contrapuntists, yet their chief characteristics are delicacy of taste and fertility of invention; but many circumstances concur to render the music of Venice better, and more general, than elsewhere. The Venetians have few amusements but what the theatres afford; walking, riding, and all field-sports, are denied them. This in some degree accounts for music being so much, and in so costly a manner, cultivated; the number of theatres, in all which the gondoliers have admission gratis, may account for the superior manner in which they sing, compared with people of the same class elsewhere. And in the private families, into which the girls of the conservatories marry, it is natural to suppose that good taste and a love for music are introduced.

Venice, in 1639, was the first city in Italy that opened public theatres for the performance of operas; and in less than a century from that period, 658 musical dramas were brought on the several stages of that city, the chief part of which were produced by natives of the Venetian state. In the last century, not only the poetry and music of the lyric theatre were greatly superior to those of preceding times, but the performers; for at Venice all the great vocal talents to which the opera had given birth, were more constantly summoned, patronized, and cherished, than in any other city of Europe.

Accounts are kept at Venice in lire of 20 soldi or marchetti; and each soldo is divided into 12 denari or lira. They are also kept in ducats of 24 grossi; and the grosso is divided into 12 grossetti, or denari of ducato. A ducato of account is worth 64 lire, or 124 marchetti. The gold coins of the old republic are zecchini, or sequins, with halves and quarters. The sequin is commonly reckoned at 22 lire, but its agio fluctuates, and in the year 1805 it was 37 per cent. The silver coins are the scudo Veneto, or della croce, of 12 lire 8 soldi, and halves and quarters in proportion; the ducatone, or quintina, of 11 lire; the ducato effettivo of 8 lire, with halves and quarters; and the grossi of 30 soldi, called liraazz, and of 20, 15, 10, and 5 lire. There are also pieces of 10 lire, which were coined in 1796. The copper coins are soldi and half-soldi, or bagattini.

When Venice became subject to Austria, in 1797, a bache for mone was introduced, called moneta provinciale, which, in 1802, was declared to be out of currency; and a new coinage took place, confisting of pieces of 12, 6, 3, 2, and 1 soldi, or, in Austrian money, of 18, 12, and 6 kreutzers, which contained only a fourth of fine silver, but they were heavier than the former coinage. This money was called "mo- neta di nuovo flamo." The Austrian government also intro- duced copper pieces of 6 and 3 kreutzers, or 10 and 5 soldi, and pieces of 2 and 1 soldi. All the above-mentioned monies and coins are now valued in "moneta piccola," which is the effective currency of Venice.

The bank of Venice was instituted in 1587; its original capital being five millions of ducats. The owners received no interes for their money, but could draw it out on demand or transfer it in payment, like the banks of Amsterdam, Hamburg, and other banks of deposit. Bills of exchange were mostly paid in banco, and also wholesale bargains of merchandise above 300 ducats. The bank received no money but sequins and silver ducats. The bank of Venice was in high credit and prosperity from its first institution to the year 1797, when the French seized upon the city, and closed it to Austria; from this period it declined. In 1805 Venice was incorporated with the kingdom of Italy; and in 1808, the bank was totally discontinued.

According to the rate of coinage, 68½ sequins are to contain a Venetian mark of fine gold, with a very small, but uncertain, quantity of alloy. No remedy was allowed at the mint of Venice, either in the weight or fine- ness of its coins. The Venetian sequin, weighing nearly 5½ English grains, is therefore worth 92.6d. sterling. The silver ducat weighs 35½ English grains, and is 9 oz. 185 dwts. fine, which gives its value at 40½d. sterling; hence the ducat of account of 64 lire piccola is worth 31½d. nearly, and the lira about 5d. sterling; or, more exactly, l. sterling = 47 lire 8 soldi piccoli. But taking the value of the lira from the coinage introduced by the Austrian government, it will be found worth about 42½; and l. sterling = 56 lire 9½ soldi piccoli.

Venice has two different weights for merchandise, viz. pezzo grosso, or large weight; and pezzo fottile, or small weight: the pound of the former is divided into 12 oz. and 192 carats, in all 2304 carats; and the pound of the latter into 12 oz. and 144 carats, in all 1728 carats. The pound pezzo grosso weighs 19 oz. pezzo fottile; hence 12 lbs. pezzo grosso = 19 lbs. pezzo fottile; and 18 lbs. pezzo grosso, or 28½ lbs. pezzo fottile = 19 lbs. avoirdupois. A carico is 400 lbs. pezzo fottile. The ounce for weighing silk and thread is divided into six faggi or fazi, and these into halves, quarters, &c. Oil is sold either by weight or measure: a migliaio weight contains 400 mili, each 25 lbs., and all 1000 lbs. pezzo grosso. A migliaio measure should contain 1210 lbs., or 40 mili, each 304 lbs. pezzo grosso; such a miro answers to about 4½ English gallons. The amphora, a wine measure, contains 4 bigoncia; a bigoncia, 4 quartari, 16 fascie, or 256 lbs. pezzo grosso; but a bigoncia of brandy is only 14 fascie.

Two forts of long measure are used at Venice, both of which are called the braccio; that for woolens is 26® English inches, and that for silk is 24® English inches. The Venetian foot is 154 French lines, or 133 English inches; hence 36 Venetian feet = 41 English feet.

Venice exchanges with London 50 lire piccola, more or less, for 1½ sterling, at three months' date. The figure for bills drawn from London is three months after date. Bills are allowed six days grace, after which they must be either paid or protested. Protests are made by the fanti or clerks of the commercial college, who enter all the bills they have protested in a book, to which every merchant has free access. Thus many bills, which would otherwise be returned, are accepted and paid for the honour of the drawer or indorser. This practice is likewise useful in giving early notice of approaching insolvency. (Kelly's Uni. Camb.) Venice is situated 216 miles N. of Rome. N. lat. 45° 28'. E. long. 12° 18'.
VENICONTES, a people of Britain, S. of the Cal-
domii to the W., whose town was Orca. Ptol.
VENIERO, DOMENICO, in Biography, an Italian poet,
born was of a noble family at Venice in 1517; and after
receiving a good education, and being introduced to the
friendship of Bembo, and having been thus led into the
way of advancement to honourable and lucrative flats,
the he left the use of his limbs at the age of thirty-two, and was con-
fined to his chamber for life. In this condition he fought
falsely from poetry and the conversation of his learned
friends, who in great numbers return to his house. These
meetings laid the foundation of the celebrated Venetian
academy, of which Veniero was the principal ornament.
Notwithstanding the pain which he experienced, his poems
are distinguished by liveliness of imagery and force of
expression. He died in 1582, at the age of sixty-five. His
poems were first printed in the collections of Dolce and
Ruccelli; and they were edited at Bergamo in 1551 and
1753, with those of his nephews, Maffeo and Luigi Ve-
nero, the former of whom was archbishop of Corfu. Their
father Lorenzo was also a poet. Gen. Biog.
VENIRE FACIAS, or Low, is a judicial writ, lying
where two parties plead, and come to issue; directed to the
sheriff, to cause twelve men, of the same neighbourhood,
to meet, to try the fame, and recognize the truth upon the
issue taken.
Afterwards, a compulsive process is awarded against the
jurers, called holcas corpora juratum, or distringas, that
they may appear upon the day appointed. See Jury.
VENIRE Facias is also the name of a writ, which is the
proper process in an indictment for any petty misdemeanor,
or on a penal statute, and which is in the nature of a summons,
to cause the party to appear. And if by the return to such
venire it appears, that the party hath lands in the county
by which he may be disdained, then a diverse shall be
issued from time to time till he appears. But if the sheriff
returns that he hath no lands in his bailiwick, then, upon his
non-appearance, a writ of capias shall issue; and if he cannot
be taken upon the first capias, a second and a third shall
issue, called an alias, and a partes capias.
VENIRE Facias tPost Matronas. See VENTRE Insuiciendo.
VENISON, VENISON; the flesh of beasts of game, or
of animals to be caught in the way of game, i.e. by hunting,
&c. as dear, hare, &c.
The word is French, venaison; formed of the Latin ven-
natio, hunting.
The old huntsmen have determined, that every beast of the
foret, that is food for man, is venison. In many parts of
the world the bears are as regularly hunted as the hare
and buck, &c. are with us, and there are called venison.
but with us, at present, the word venison seems limited to
the flesh of the hart, the hind, the buck, the doe, and the
other creatures of that kind.
Some have extended the signification of the word to the
beasts of the forest which were chaced as game, and afforded
the diversion of hunting, whether their flesh were eaten or
not: thus, in some places, the wolf and the fox are reckoned
among the venison beasts.
VENIUS, or VAN-VEEN, OTHO, in Biography, was of
a distinguished family in Holland, and was born at Leyden
in 1556. He received an excellent education from his
parents, and though his progress in literature was unufual,
yet he was permitted to pursue his desire of becoming a
painter. He received lessons in design from Isaac Nicolas,
but is more indebted to John Van Vingen. The war in the
Low Countries drove him to Liege at the age of fifteen,
and there he continued to prosecute his studies in literature
and the arts. He acquired the favour of cardinal Grobeck,
at that time prince bishop of Liege, who, desirous of his
advancement, advised him to visit Rome, and furnished him
with letters of recommendation to cardinal Marducio, then
in that city. On his arrival there he was kindly received
and entertained by his eminence, and he became a disciple
of Fred. Zuccaro, by whose instructions, and his own in-
dustry in studying the beautiful works of antiquity with
which he was surrounded, he acquired a very great degree of
correctness in design, and a more elevated taste than his
countrymen usually exhibited in their works.
Having devoted seven years to his studies in Italy, he
visited Germany, where he raised some time, and received a
flattering invitation to remain in the court of the emperor;
but his desire to revisit his native country prevailed, and he
decided this honourable proposal. As he passed through
Munich and Cologne, he was employed by the duke of Ba-
varia and the elector; and on his arrival at Brussells, the
governor, Alexander Farene, appointed him his principal
engineer and painter, and sat to him for his portrait.
After the death of his patron he established himself at
Antwerp, where he was much engaged in painting histori-
cal works for the churches, &c. and gained a great reputa-
tion; which has not been diminished by his having had for
his disciple so renowned an artist as Rubens.
When the archduke Albert was appointed governor of
the Netherlands, Otho Venius made the designs for the
triphal arch erected on his entrance, with which the arch-
duke was so much gratified, that he invited him to Brussells,
and appointed him his principal painter, and master of the
mint, which situations he occupied until his death in 1634,
at the age of 78.
Otho Venius did not confine himself to painting, he wrote
and published several works adorned with prints, chiefly en-
graved by his brother, Gilbert Venius, from his designs.
Among them are, a translation of part of Tacitus; Horace's
Emblems, with notes and observations; the Life of Thomas
Aquinus; and the Emblems of Love, divine and profane.
VENIY, in Geography, a town of France, in the de-
partment of the Yonne; 3 miles N. of St. Florentin.
VENLO, a town of France, in the department of the
Lower Meuse, late the duchy of Guelders, situated on the
E. side of the Meuse, takes its name from the two
Flemish words Veenen and Loo, which signify a low meadow.
Before the year 1343, it was only a small town, when Ru-
naud II., duke of Guelders, fortified it, and gave it the title
and privileges of a city. It has only one parish-church,
which is dedicated to St. John. After several changes of
poles, it was ceded, in 1715, to the States-General by the
barrier treaty. In this town was made the first trial of
bombs, about 1588; and they were first used by Alexander
Farene, duke of Parma, at the siege of Watchendonck,
not long after. In 1794, it was taken by the French; 12
miles N.N.E. of Ruremon. N. lat. 51° 29'. E. long.
6° 2'.
VENO, a town of the republic of Lucca; 5 miles
S.S.W. of Lucca.
VENOE, a small Danish island, in the gulf of Lym-
ford. N. lat. 56° 34'. E. long. 8° 38'.
VENOM, VENENUM. See Poison.
The terms venom and poison only differ from each other
in this, that the latter is more frequently used where
the noxious matter is taken inwardly, as in foods, drinks, &c.;
and the former, where it is applied outwardly, as in stings
and bites of serpents, scorpions, vipers, spiders, &c.
The pike is said to have a venomous tooth. All venomous
beasts, in the general, have that quality in a greater degree,
when
when bred in mountains and dry places, than when in wet and marshy places; and the southern more than the northern; thofe hungry and enraged, more than others; and all of them in summer more than winter. See Viper.

VENONIS, in Ancient Geography, a town of Britain, in the 9th Iter of Antonine, situated between Ratis or Leicelte, at the distance of 12 miles from it, and Bannaventum near Daventry; supposed to be the ancient Cleyelte.

VENOSA, CARLO GESUALDO, Prince of, in Biography, a Neapolitan nobleman, whose fame has been extended by his musical productions more than by his high rank, though this rank will be found reciprocally to have added luster to the compositions, was nephew to cardinal Alfonso Gesualdo, archbishop of Naples, and had his title from the place which gave birth to Horace, the Venustum of the ancients. Pomponius Nenna, a voluminous and celebrated composer of madrigals, had the honour to intrust him in music. His productions consist of fix sets of madrigals for five voices, and one for fix. The principal editor of his works was Simone Molinaro, maeftra di capella at Genoa, who, in 1585, published the first five books in separate parts; and, in 1613, the fame madrigals, with the addition of a sixth book, in folio.

The numerous editions of thefe madrigals in different parts of Europe, and the eulogies bestowed on the author by perfoners who rank high in literature, as well as music, made us extremely curious to see and examine them. Gerard Vossius, Bianconi, Bapt. Doni, Taffoni, and many others, speak of him as the greateft composer of modern times; as one who, quitting the beaten track of other musicians, had discovered new melodies, new measures, new harmonies, and new modulations; fo that fingers, and players on instruments, defpifing all other music, were only pleased with that of this prince.

Taffoni tells us, that James I. king of Scotland, had not only composed sacred music, but invented a new species of plaintive melody, different from all others; "in which he has been imitated by the prince of Venosa, who, in our times, has embellifhed music with many admirable inventions."

This paffage in Taffoni, which has fo often been cited by Scots writers, seems to imply, not only that James, king of Scotland, had invented a new species of melody, but that his melody had been imitated by the prince of Venosa; at least, this is the fenfe in which the paffage has been understood by the natives of Scotland, and indeed by ourselves, till, on finding no kind of similarity between the national tunes of North Britain and the melodies of the prince of Venosa, we examined the paffage anew, with more attention; when it appeared to us as if Taffoni's words did not imply that the prince of Venosa had adopted or imitated the melodies of king James; but that these princely deliitants were equally cultivators and inventors of music. See David Rizzio, Scots Tunes, and Ossian.

The Neapolitan prince seems to merit as little præfence on account of the expreffion of words, for which he has been celebrated by Doni, as for his counterpart; for the syllables are constantly made long or short, juft as it befuit his melody; and in the repetition of words, we frequently fee the fame syllable long in one bar, and fhort in another, or the contrary; by which it is manifest that their fufficient accentuation was never thought of.

The remarks of Taffoni certainly must have been hazarded either from conjecture or report; as is but too frequently practifed by men of letters, when they become musical critics, without either induftry or science fufficient to verify their affections.

The prince of Venosa was perpetually flattering at new expreffion and modulation, but feldom succeeded to the satisfaction of pofterity, however dazzled his contemporaries may have been by his rank, and the character he bore among the learned, who fo frequently get their musical information from tradition, that whether they praife or cenfure, it is ufally sans connoiflance de cause.

Dilettanti ufually decide in the fame summary way, with an additional prejudice in favour of their own little knowledge, and a difpofition to cenfure whatever they are unable to acquire, be it science or execution.

Cicero has long fince faid, that "it is not with philofofy and science, as with other arts; for what can a man fay of geometry or music, who has never f tudied them? He muft either hold his tongue, or talk nonfence."

With refpect to the excellencies which have been fo liberally bfeffed on this author, who died in 1614, they are all difputable, and fuch as, by a careful examination of his works, he feemed by no means entitled to. They have lately been faid to confift in "fine contrivance, original harmony, and the faultefs modulation conceivéable." As to contrivance, it muft be owned that much has been attempted by this prince; but he is fo far from being happy in this particular, that his points of imitation are generally unmanageable, and brought in fo indiscriminately on concords and fifords, and on accented and unaccented parts of a bar, that, when performed, there is more confusion in the general effect than in the music of any other composer of madrigals with whose works we are acquainted.

His original harmony, after foaring a great part of his madrigals, particularly thofe that have been the moft celebrated, is difficult to discover; for had there been any warrantable combinations of founds that Palestrina, Luca Marenzio, and many of his predeceffors, had not used before him, in figuring the fakes, they would have appeared. As to his modulation, it is fo far from being the faultefs conceivable, that, to us, it fefms forced, affected, and difgutting.

We have bfeffed more remarks on this prince of musicians, and more time in the examination of his works, than perhaps they now deferve, in order to furnish our readers with what fets, to our comprehension, a truer idea of that which partiality and ignorance have hitherto given. A fcore of one of his madrigals in the 3d vol. of Burney's Gen. Hift. of Mus. p. 223, will justify our cenfures of the musical productions of this tuneful prince.

VENOSA, in Geography, a town of Naples, in Baflieate, the fce of a bishop, suffragan of Matera. It contains seven churches, and as many convents. In the 9th century, Venosa was taken by the Saracens, and in 1528 by the French; 9 miles N.N.W. of Acerra. N. lat. 40° 58'. E. long. 15° 48'.

VENOSA Arteria. See Arteria Venosa.

VENOSTA, in Geography, a valley of the Tyrolefe, on the banks of the Adige; 20 miles S. of Glurentz.

VENOSUM Foliwm, in Botany and Vegetable Phyfilogy, a veiny leaf. See Leaf and VEN.

VENOUS, Venous. See VEN.

VENT, in Geography, a river of England, in the country of Cumberland, which runs into the South Tyne.

VENT, formed from ventus, wind, vent-hole, or spiracle, a little aperture left in the tubes or pipes of fountains, to facilitate the air's escape; or, on occasion, to give them air; as in frothy weather, &c. for want of which they are apt to burst.

A vent, taken in this fenfe, is properly the end of a pipe, placed
placed erect, and reaching above the ground; usually folded to the turns, or elbows, of pipes. The vents of large pipes are to be as high as the supericies of the reservoir, unless there be a valve in them.

*Vent* is also used for a little hole, pierced in vessels of wine, beer, &c. that are on tap; and which admits air enough to make the liquor run, but not so much as to corrupt and spoil it.

*Vent*, again, is applied to the covers in wind-furnaces, by which the air enters, which serves them for bellows; and which are stopped with register, or flaps, according to the degree of heat required; as in the furnaces of glass-houses, aﬄayers, &c.

*Vent* is also used for a pipe of lead, or other matter; one end of which opens into the cell of a necessary-house, and the other reaches to the roof of the house, to give room for the corrupt fettid air to exhale.

There are also vents, or apertures, made in the walls which sustain terraces, to furnish air, and give a passage for the waters.

This kind of vent the Italians, and we from them, call a *barbaccia*.

*Vents*, in Gunners. See Touch-hole.

The common method of placing the vent is within about a quarter of an inch from the bottom of the chamber or bore. Some, however, have thought, that if the vent was to come out at the middle of the charge, the powder would be inflamed in less time than in any other case; but Mr. Muller, by firing mortars with two vents, one at the bottom and the other in the middle, and so contrived that one was shut whilst the other served to fire, found always the range of the shell greater when the lower vent was used, than when the powder was fired by the middle one. Artillery, p. $5$.

Mr. Thompson (Count Rumford) has lately made a number of experiments, in order to determine the best position of the vent; from the result of which it appears, that the effect of placing the vent in different positions with respect to the bottom of the chamber, is different in different charges; but the difference in the force exerted by the powder, which arose from the particular position of the vent, was in all cases so inconsiderable, as to afford occasion for concluding, that any given charge of powder exerts nearly the same force, whatever is the position of the vent. He infers, upon the whole, that in the formation of fire-arms no regard need be had to any supposed advantages that gunsmiths and others have propounded to derive from particular situations for the vent; such as diminishing the recoil, increasing the force of the charge, &c. but the vent may be indifferently in any part of the chamber where it will beft anfwcr to other accounts; and he thinks there is little doubt but the fame thing will hold good in great guns, and all kinds of heavy artillery. Workmen in general agree, that the vent in fire-arms should be as low or far back as possible, in order, as they conceive, to leffen the recoil: accordingly some make the bottom of the chamber flat, and bring the vent out even with the end of the breech-pin; others make the vent flanging through the breech-pin, in such a manner as to enter the bore jut in its axis; others again make the bottom of the chamber conical; and there are thofe who make a little cylindrical cavity in the breech-pin, of about two-tenths of an inch in diameter, and near half an inch in length, coinciding with the axis of the bore, and bring out the vent even with the bottom of this little cavity.

The objection to the firft method is, that the vent is apt to be fopped up by the foul matter that adheres to the Vol. XXXVI.

piece after firing, and which is apt to accumulate, especially in damp weather. The fame inconvenience in a greater degree attends the other methods, with the addition of another, arising from the increased length of the vent; for the vent being longer, is not only more liable to be obstructed, but it takes a longer time for the flame to pass through it into the chamber; in consequence of which the piece is flower in going off, or, as sportsmen term it, is apt to hang fire. Mr. Thompson propofes, that the bottom of the bore should be in form of a hemifphere; and that the vent should be brought out directly through the side of the barrel, in a line perpendicular to its axis, and pointing to the centre of the hemifpheric concavity of the chamber. In this case the vent would be the shortest possible; it would be the leaft liable to be obstructed, and the piece would be more easily cleaned. Similar advantages, he apprehends, would be gained by making the bottom of the bore and vent of the great guns in the fame manner. Phil. Tranf. vol. lxxi. part ii. p. 372, &c.

From a variety of experiments made by order of the king of Pruflia in 1765 and 1766, it appears, that the concave chamber produced the greatest ranges, and that the bottom of the chamber is the best place for the vent.

*Vent*-Aftragal, is that part of a gun or howitz which determines the vent-field.

*Vent*-Field, is the part of a gun or howitz between the breech-mouldings and the aftragal.

*Vent*, Port. See Port-vent.

*Venta*, in Ancient Geography, a name given to several Britifh towns, of which our antiquaries have given different etymologies. Mr. Baxter’s conjecture may be allowed to be most probable, who fuppofes that it is derived from *ventum*, or *vent*, which signifies head or chief. For it is observable, that all the towns which were named Venta, were the capitals or chief towns of the nations or people to whom they belonged.

*Venta Belgarum*, a town of Britain, placed in the seventh Iter or route of Antonine, from Regnum or Chichefter to London, between Caflentum or Old Southampton, and Calleva Atrebatum or Silhchifter; and situated at the preent Winchester, as our antiquaries agree. It was the capital of the Belges.

*Venta Iceniara*, a town of Britain, placed at the head of the ninth Iter or route of Antonine, 128 miles from London. This town was probably the capital of the Iceni, or ancient inhabitants of Norfolk, Suffolk, Cambridgshire, and Huntingtonshire; and it is generally fuppofed by our antiquaries to have been situated at Caifer, upon the river Yare, about three miles from Norwich, which is thought to have arifen out of the ruins of this ancient city. Here have been found some faint veftiges of this ancient capital of the Iceni.

*Venta Silurum*, a Britifh town, placed in the fourteenth Iter or route of Antonine, from Ifca or Caerleon, to Calleva or Silhchifter. This was a confiderable town of the Silures, between Ifca and Abona. It is our Caergwent. See Silures.

*Venta Cibay*, Lut, in Geography, a town of Spain, in Guipjufcoa; 6 miles from Tregvino.

*Vento de Cruz*, a sea-port town of America, on the Jthmus of Darien, on the river Chagre, where the merchandise from Panama is put on board barks to be conveyed to Porto Bello; 20 miles N. of Panama. N. lat. $9^\circ 26’$.

*Vento Quemada*, a town of Spain, in the province of Jaen; 42 miles N. of Jaen.

*Vento de en Medio*, a town of Peru; 20 miles N. of Oruro.
VENTALDA, a town of Sweden, in the province of Smaland; 34 miles S.E. of Jonköping.

VENTAROLI, a name given in Sicily, &c. to grottoes formed under their houses, from which issues a constant extreme cold wind, and at times with impenetrability, and a noise like water dashing upon rocks. These are shut up with doors like cellars, and made use of as such, as also to keep provisions fresh, and to cool liquors. At Cefi, in the Roman flat, there are many such ventaroli; and the inhabitants of that town, by means of leaden pipes, conduct the fresh air from these into the rooms of their houses, so that by turning a cock they can cool them to any degree. Some who have refined still more upon this luxury, by smaller pipes, bring cold air under the dining table, so as to cool the bottle of liquor upon it. On mount Etna and Vesuvius, and in the island of Ichia, there are many caverns of this kind. Phil. Trans. vol. lxx. part i. p. 73.

VENETANATIA, in Botany, was so named by M. Paliflet-Beauvois, in honour of the late M. E. P. Venetan, member of the National Institute, a distinguished French botanist, who was formerly an ecclesiastic, and, if we mistake not, of some religious order; but he took advantage of the revolution to free himself from such unnatural and immoral shackles, in order to fulfil the duties of a man and a Christian. He has distinguished himself by the publication of a Tableau du Régne Végétal, selon la Méthode de Jussieu, in 4 vols. 8vo.; as well as the magnificent Jardin de la Malmaison, with coloured plates, in large folio; and the uncoloured Jardin de Cels, and Choix de Plantes; the latter having been soon cut short by his death. The writer of this article had dedicated to the name of M. Venetan, a New Holland genus, (see Stillingia,) which now yields to the prior right of the genus before us.—Palif. Beauv. Fl. d'Oware et de Benin, fusc. 2. De Their 479. Poiret in Lamarck Dict. v. s. 450.—Clafs and order, Polyandria Monogynia. Nat. Ord. Tiliaee Juff. ?

Gen. Ch. Cal. Perianth inferior, in three deep, equal, oblong, obtuse, concave, coriaceous, deciduous segments. Cor. Petals numerous (eleven or twelve), filamentate, spreading, strongly veined; rounded at the extremity; contracted into a claw at the base. Stam. Filaments numerous, thread-shaped, erect, unequal, much shorter than the petals, inserted, like them, into the receptacle; anthers... Pfl. Germen superior, oval; style thread-shaped, undivided, longer than the stamens; stigma thick, obscurely five-lobed. Peric. Berry oval-oblong, of five cells, furrowed longitudinally, terminating in a kind of mammillar point. Seeds numerous in each cell.

Efl. Ch. Petals numerous. Calyx in three deep deciduous segments. Berry superior, of five cells, with many seeds.

Obf. M. Paliflet Beauvois remarks, that this genus is obviously referrible to Jussieu's 15th clafs, (Poiret by mistake says the 3d,) but its order in that clafs is not so easily determined. Deflections of the ripe seed are wanting to ascertain this point. The fruit nearly accords with Jussieu's Aurantas, but the structure of the flower, and the want of pellucid dots in the leaves, exclude it from that order. The want of Azipulas prevents its perfect agreement with the Thiaees, and M. Beauvois considers this genus as probably marking one of a new order, confounded by Jussieu with his Thiaees.

1. V. glauca. Glaucous Venetanatia. Palif. Beauv. Fl. d'Oware et de Benin, 29. t. 17. Poiret n. 1. — Native of elevated, airy, open situations, near Agathon, on the coast of Africa. A shrub, with alternate, round, smooth branches. Leaves alternate, stalked, very large, elliptic-oblong, entire, tipped with a long acute point; rounded at the base; smooth on both sides; covered on the under surface with a kind of glaucous viscidity, which when dry becomes almoast powdery. Stipulas none. Flowers lateral, towards the extremity of each branch, solitary, stalked, alternate, sometimes opposite to the leaves; their flasks half the length of the leaves, cylindrical. Calyx short, smooth. Corolla large, of a fine crimson, beautifully veined. Poiret.

VENTER, in Anatomy, the abdomen; called also minus venter. See ABDOMEN.

Venter is also used for the womb, or uterus, of women. And hence the writ de ventre inspiciendo.

Hence, also, in the civil law, we say, partus sequitur venterem, the child follows the belly; meaning, that its condition is either free or servile, according to that of its mother.

They also say, to appoint a curator for the belly, with regard to posthumous children, yet in the mother's womb. With regard to princes, the venter, or belly, has been sometimes crowned in form.

Venter is also used, in speaking of a partition of the effects of a father and mother, among children born, or accruing, from different marriages.

This partition is so ordered, as that a single child of one marriage, or venter, takes as much as several of another marriage, or venter; in order to which, the estate is divided into so many parts as there have been venters, or marriages.

Venter, or Belly, of a muscle. See Belly of a Muscle.

Venter Draconis, Dragon's Belly, in Astronomy. See Dragon's Belly. See also DRAGON-in Astronomy.

Venter Equi, Horse's Belly, among Chemists, denotes horse-dung, or a dunghill, on which are included certain vehicle for particular operations, to be performed by means of the gentle heat of it.

VENTES les Grandes, in Geography, a town of France, in the department of the Lower Seine; 9 miles N.W. of Neuilly.

VENTHIE, LA, a town of France, in the department of the Straits of Calais; 9 miles N.E. of Bethune.

VENTIA, in Ancient Geography, or Venetianum Civitas, a town situated in the Maritime Alps. Dion Callius, speaking of an expedition, dated in the year of Rome 693, against the Allobroges, who had revolted, mentions a town under this name, at a small distance from the Ifere. According to some circumstances pertaining to this expedition, there is reason to believe that it is Vini, between Moirène, or Tullin and St. Marcellin, at some distance from the right bank of the Ifere.

VENTIDUCTS, in Building, are spiracles, or subterraneous places, where fresh cool winds, being kept, are made to communicate by means of tubes, funnels, or vaults, with the chambers, or other apartments of a house, to cool them in sultry weather.

These are much in use in Italy, where they are called ventidotti. Among the French they are denominated prifons des vents, and palais d'Eole. See VENTAROLI.

VENTILAGO, in Botany, so called by Gertner, because the appendage to the feed-vehicle was thought to bear some resemblance to a winnow or flapper, ventilabrum. It does not answer to the common idea of a fan, being neither plaited, nor much dilated upwards.—Gertn. v. 1. 223. t. 49. Willd. Sp. Pl. v. 1. 1106. Roxb. Coromand. v. 1. 55. Mart. Mill. Dict. v. 4. Poiret in Lamarck Dict. v. 8. 452.—Clafs

Gen. Ch. Cal. Pienanth inferior, of one leaf, cup-shaped, with five equal, triangular, deciduous, marginal segments. Cor. Petals five, spatulate, inserted into the rim of the calyx, alternate with its segments, and rather longer. Stam. Filaments five, awl-shaped, opposite to the petals, the length of the calyx; anthers of two round lobes. Pjfi. Gernen superior, invested below with the tube of the calyx, nearly globose; style short, cloven half way down; stigma two, divaricated, acute. Peric. Capsule globose, of one cell, and two valves; splitting at the base; crowned at the summit with an elliptic-oblong, flat, coriaceous, ribbed wing, many times longer than the capsule. Seed solitary, globose.

Eff. Ch. Calyx cup-shaped, with five deciduous segments. Petals five, opposite to the flamen. Capsule of one cell, crowned by an elongated wing. Seed solitary.

Obf. Gærtner did not see the capful in a sufficiently advanced state to discover that it has really two valves, which separate at the base, connecting with the apex by their long coriaceous wing, in which the most remarkable character of the genus consists. The flowers are occasionally dioecious, from the imperfection of one or other organ of impregnation.

1. V. maderaspatana. Yerra Chirtaly of the Te-lingas. Wildl. n. i. Roxb. Coromand. v. i. 55. t. 76. (Funnis viminalis; Rumph. Amboín. v. 5. 3. t. 2.)—Native of forests and uncultivated places, among the mountains of Hindooiland and Ceylon, and of rocky thicketts on the shores of Amboyana, flowering in the cold season. The stem is woody, climbing to a great extent, with long, round, pliant, tough, leafy, often downy, branches. Leaves alternate, on short filks, ovate, bluclift, two or three inches long, coriaceous, more or less obscurely crenate, feldom quite entire, smooth or minutely downy, furnished with one midrib, and many transverse ones, connected by extremely fine parallel veins. Flowers very numerous, small, greenish-white, in large, terminal, compound panicles, their scent highly offensive, resembling Sterculia faida. Wing of the capule entire, greenish-yellow, slightly downy, above an inch in length. — Wildenow, according to Poiret, has distinguished two species of this genus, in the new Transactions of the Berlin Society; one having entire and smooth, the other crenate and downy, leaves. But we are persuaded, from an examination of wild specimens from Roxburgh and Koenig, that these characters are variable.

VENTILATION OF MINES, comprises the various modes by which impure air is removed, and a current of atmospheric air supplied through the subterranean openings and passages of mines. The health, the safety, and lives of a very large and indistinguishable class of the community depend on the regular ventilation of mines; yet the application of the principles on which this should be undertaken has been but imperfectly understood, and it is but very recently that the subject has engaged the attention of men of science. Since the constitution of the atmosphere was ascertained, (see Atmosphere,) it is well known that the one-fifth part of it, or the oxygen gas, is essentially necessary to support the processes of respiration or combustion, by which it undergoes a chemical change, and is converted into carbonic acid gas, a gas destructive of animal life, and in which flame is instantly extinguished. It is also as well known, that the remaining four parts of the atmosphere, or the azote, are equally destructive of life, and incapable of supporting flame; hence the necessity of ventilation, or a regular supply of fresh air, in all confined situations, where men are to labour or exist, is very easily explained. Besides the destruction of oxygen gas by respiration or combustion, which takes place in confined apartments above ground, there are other causes that render the air impure in almost all subterranean passages or mines, through which there is not a regular current of wind constantly passing. The causes by which the air in mines is rendered impure, or destructive of animal life, are of three kinds. First, the respiration of men and horses in the mine, and the combustion of the lamps, &c.; secondly, the production and evolution of carbonic acid gas in the beds or strata in which the mine is situated; and thirdly, the production of carburetted hydrogen or inflammable gas. For the properties of these gases, see Gas. The two former sources of impurity are much less destructive of life than the latter, the inflammable gas or fire-damp of the miners; when this becomes mixed to a certain degree with the air of the mine, it explodes with great violence on the approach of a lamp or candle, and occasions the most fatal accidents, destroying all the vital air in the mine, and burning or suffocating the workmen. By explosions of this nature, it was estimated that not less than six hundred persons perished during the years 1813 and 1814, in the coal-mines on the rivers Tyne and Wear, in Northumberland and Durham; and the destruction of human life in other coal districts has been perhaps equally great, in proportion to their extent. In the ventilation of mines, where the air is impure from respiration, combustion, or the evolution of carbonic acid gas, called by the miners chok-damp, the object of the miner is simply to introduce a current of fresh air through the works; but besides the difficulties to be overcome in effecting this, where the works are extensive, the miner who has to combat with the fire-damp must guard against the greater evil of an explosion, to which he is almost constantly exposed.

In the working of metallic mines, the veins being generally nearly vertical, the currents of water, or the natural passages, aided by the varied temperature of the mine, are frequently sufficient to infuse the circulation of air; and these mines are very rarely affected by the production of the fire or chock damp. It is principally where a shaft or well is sunk, or a horizontal passage or gallery is made, that any means of artificial ventilation are necessary. The mode of opening a communication with some other part of the mine, or with the surface; and when this is done, the ventilation is found to be perfect by the rushing of the currents, which often takes place with considerable force, from the different degrees of temperature in the lower and upper air, and these currents change their direction as the temperatures above and below alternate. The great objection to this mode is the expense with which it is commonly attended wherever the gallery is at a great depth, and the intervening rock of a very hard kind, and where a shaft is merely wanted to supply air, and not for the passage of the water. To avoid this, the shaft or level is sometimes divided into two distinct parts, communicating near the part intended to be ventilated, so that a current may be produced in opposite directions on each side of the partition; and this is often effectual to a certain extent. It has, however, its limits at no very great distance, and the current is but a feeble one, from the nearly equal temperature of the air on each side of the partition.

The other mode employed is to force air down tubes with a large pair of bellows worked by the hand, or by boxes or cylinders of various forms placed on the surface, with a large opening against the wind, and a smaller one communicating with the air-pipes by a cylinder and pinion working...
VENTILATION.

Mr. John Taylor, in the Transactions of the Society of Arts for 1810, has described a method of effecting this process more easily, by attaching an air-pump of a very simple construction to a small fall of water. The engine discharges more than two hundred gallons of air in a minute, and a stream of water supplied by an inch and a half bore falling twelve feet is sufficient to keep it regularly working. This method may be introduced with great advantage into narrow passages or wells, but would be obviously inadequate to ventilate the immense excavations in coal-mines, except it were directed only to some confined part of the works. In metalliferous mines, the generation of the fire-damp is much less frequent than in coal-mines, and the extent and position of the excavations make the ventilation of the latter a labour of much greater difficulty. The most valuable beds of coal in England, with the exception of Staffordshire, are from two to nine feet in thickness, and they rarely incline more than about fifteen or twenty degrees from the horizontal level, and are frequently nearly flat. Each pit has two shafts or wells, called the downcast pit and the upcast pit. The excavations or passages in the coal, which communicate from one pit to the other, are frequently not less than forty miles or more in length, through which circuitous route the air has to take its course, though the distance from the downcast to the upcast shaft, in a right line, may not be more than a few hundred yards or feet, or even much nearer. And here we cannot but observe, that as the means to force the air through a route of such extent must be very complicated, and as a failure or accident to a part might destroy the whole ventilation, we conceive that much too large a surface is frequently worked from two shafts, in order to avoid the expense of additional shafts for several detached workings of a smaller extent. By this, the risk of the workmen is greatly increased, to evade expence to the owners of the coal. In the year 1813, some gentlemen in the north of England, impressed by the dreadful catastrophes which had recently taken place, very laudably established a society, with a view to inquire into the causes of these calamities, and the possible means of prevention. They entituled themselves "A Society for preventing Accidents in Coal-Mines:" Mr. John Buddle, an eminent coal-viewer in Northumberland, addressed a letter to the president, which was published by the society in 1815. In this letter he details the various methods which had been employed for the prevention of accidents by fire, which, he says, "conflict in a mechanical application of the atmospheric air to the removal or sweeping away of the inflammable gas, as it is generated in the workings of collieries, or as it issues from the fissures which the workings intercept in their progress." He details the various methods by which this is effected: these are explained by a number of figures and sections, without which they could not be rendered intelligible to the reader. We shall endeavour to give an idea of the principle on which the various modes of ventilating mines depend, by stating one of the simplest forms in which they can act. If two wells or shafts were sunk at a given distance, say fifty yards from each other, and a horizontal passage were cut from the bottom of one well to the other, so soon as the communication were made, there would be a tendency in the air to defend one shaft and ascend the other, whenever the temperature of the external air varied from that of the air below. The currents of air in natural caverns, that are open at each extremity, proceed from the same cause. In certain states of the atmosphere, should the current not be sufficient, or should a quantity of impure air be generated in the passage, the circulation may be increased by kindling a fire at the top or at the bottom of one of the wells, so rarely the air and cause it to ascend more rapidly. Or the air may be forced down the other well, by causing a stream of water to fall into it. Alto by means of vanes, or by an air-pump attached to a steam-engine, the circulation may be easily increased according to the will of the engineer, and the facilities which may be prelented for carrying away the water, &c. Thus little difficulty could arise in a case of simple ventilation of this kind; but if from the horizontal passage which runs from one shaft to the other, we make a number of passages on each side at right angles with it, as is done in coal-mines, the current of air which passes through it will not enter these lateral passages, or occasion any circulation in them. In order, therefore, to make the air pass through the whole series, another passage must be opened, connecting the further extremities of the lateral passages with each other: the first passage must then be closed, and the air which descends conducted along the lateral passages, up one and down the other, taking a circuitous route through the whole, until it arrives at the upcast shaft, which it ascends. To conduct the air in this manner, a number of trap-doors and flaps are necessary, in order to prevent the mixture of the air from the different passages, which would entirely destroy the ventilation. See Plate IV. Geology, fig. 8, which represents part of the workings of a coal-mine; the shaded part is the bed of coal, in which the workings are carried along the different passages, from the pit or shaft a, to the pit or shaft b. The current of air is represented by darts and dotted lines. The flaps and trap-doors, which close to prevent the passage of the air, and confine the currents to a particular course, are represented by double lines and crofs lines, as at t. This figure represents the improved system of ventilation, by which the current of air sweeps every part of the workings. By tracing the darts and dotted lines, it will be seen that the current of air from the downcast pit a, first passes along the main passage to a, and the adjoining passage MB, to which it has access through lateral passages, called walls, 1, 2, 3, 4: its further progress in every direction is closed, except at 5, where it enters the passage C, from which it has access to the passage D, through the openings 6, 7, 8, 9; at E, the currents unite in one stream, and enter an advanced part of the workings, called the head-ways, ventilating the passages F and G, being forced into them by partitions called brattices, placed at X, by which the air must pass in its progress to H. Where the current of air divides and sweeps along two passages at the same time, and unites again as above-described, it is called double courting; but where it runs down one passage and up another, as may be seen in its further progress from H on the south side, to H on the north side of the mine, it is called single courting.

The remaining part of the ventilation back to the passage K, is in double courtes, along which it is forced by the flappings at s, t, and the other flappings r, r, r, so that it ascends the upcast shaft at b. Under this system, says Mr. Buddle, if the flappings, &c. be all in order, and the passages kept sufficiently open for the current of air to circulate freely, there can be no partial stagnations in the workings,—no accumulation of inflammable gas. For in the event of a large discharge of gas, from what is called a blower, commencing at any place, as at M, N, P, Q, its stream is immediately carried off by the circulating current of atmospheric air, and so diluted that it cannot explode, unless indeed the discharge of inflammable air should be so copious as to mix with the current up to the firing point, or to that degree
degree in which it would inflame by access to a lighted candle or to fire.

This improved system of ventilation by double courses was introduced into the collieries on the Tyne and Wear about the year 1760, and has ever since continued in general use; but it is found inadequate to the intended purpose in the following cases.

1. When sudden discharges of inflammable gas mix with and raise the whole circulating mass of air to the firing point.

2. When the wind is south-easterly, and the weather wet or hazy, and the barometer sinks below twenty-nine inches.

In this case the atmospheric current, which under the most favourable state of the air is merely sufficient to sweep the noxious effluvia from some mines, gets so contaminated by the discharge of inflammable gas, and the fumes of its own progress, as to be exceedingly unsafe, and generally inaccessible with candles.

3. When inflammable air fills a part of the mine between the workmen and the upcast shaft.

4. When the gas is ignited by lightning, as it ascends the upcast shaft.

The presence of inflammable gas from the lighted mixture, through all its gradations to the first firing point, is readily discoverable by an experienced collier, and he judges very correctly of the degree of inflammability and danger which threaten the safety of the mine, by observing attentively the appearance of the spire upon the top of his candle. The common pit-candles vary in size, but those generally used are forty-five to the pound; the wick is of cotton, and the candle made of ox or sheep tallow; but clean ox-tallow is best.

The mode of trying the candle, as it is called, to ascertain the mixture of inflammable gas, is as follows.

In the first place, the liquid fat is wiped off, the wick snuffed close, and carefully cleaned of red embers, so that the flames may burn as purely as possible. The candle, being thus prepared, is held between the fingers and thumb of the one hand, and the palm of the other is placed between the eye of the observer and the flame, so that nothing but the fire and the flame can be seen, as it gradually towers over the upper margin of the hand. The observation is generally commenced near the floor of the mine, and the light and hand are gently raised upwards, till the true state of the circulating current be ascertained. The first indication of the presence of inflammable air, is a flight tinged by blue or a blue-grey colour shooting up from the top of the spire to the candle, and terminating in a fine extended point. The spire increases in size, and receives a deeper tinge of blue as it rises through an increased proportion of inflammable gas, till it reaches the firing point; but the experienced collier knows accurately enough all the gradations of show (as it is called) upon the candle, and is very rarely fired upon, excepting in sudden discharges of inflammable gas. The show upon the top of the candle varies very much, according to the length of run or distance which the current of air has passed through before it is mixed with the inflammable gas. The shorter the run of the current of air before it is mixed with the inflammable gas, the less will be the show upon the candle when at the first firing point, and vice versa.

The flame size of spire which would indicate danger in a current which had passed only one mile, might be perfectly harmless in a current that had run five or six miles; consequently the length of run of the current of air is to be taken into consideration, as well as the appearance of the top of the candle. The air-course, too, for a short distance beyond a small discharge of fire-damp may be highly inflammable; but by palling a few yards further, it becomes so diluted as to be perfectly secure. The distance, therefore, within which a blower can be safely approached with candles, is regulated entirely by the magnitude of the discharge and power of the current of air. Long experience and attentive observation are consequently necessary to obtain a thorough practical knowledge of this art.

The workings of a colliery are very often inaccessible with candles near the downcast pit, called the first of the air, while they may be safely entered with any description of light near the upcast pit, called the last of the air. This arises from the inflammable gas, as it is carried from the place of its discharge, being gradually diluted by the atmospheric current. Hence the advantage of sufficient extent of pit-room, to obtain length of run to dilute the inflammable air. It is from the want of pit-room, that the explosions in newly-opened collieries are generally the most violent. The distance which the current of air passes through, between the downcast and the upcast pits, varies much according to circumstances. Mr. Buddle has known it to exceed thirty miles.

After the current of atmospheric air is so highly mixed with inflammable air as not to be accessible with lighted candles, steel-mills may be employed with safety. We shall further notice Mr. Buddle's observations on steel-mills, but we believe the discovery of the safety-lamp will entirely supersede their use. "Although the inflammable air has frequently fired at the sparks of the steel-mills, it only happens, from all the facts which I have been able to collect, when the mills are played near the place where the hydrogen gas is discharged, and this by due attention may be safely avoided.

"I never indeed witnessed an explosion from the sparks of flint; but from my own observations on their appearance in dangerous states of the air, as well as from the observations of several intelligent men, I believe that in most cases the change of the appearance of the sparks, if attentively observed, gives sufficient notice of the threatening danger. When elicited in atmospheric air, they are of a bright appearance, rather inclining to a reddish hue, and as they fly from the wheel seem sharp and pointed. In a current of air mixed with inflammable gas above the firing point with candles, they increase considerably in size and become more luminous. On approaching the firing point with steel-mills, they grow still more luminous, and assume a sort of liquid appearance, nearly resembling the sparks arising under the hammer from iron at the welding heat. They also adhere more than usual to the periphery of the wheel, encompassing it as it were with a stream of fire, and the light emanating from them is of a bluish tint. When the inflammable gas predominates in the circulating current, the sparks from the steel-mill are of a blood-red colour; and as the mixture increases, the mill totally ceases to emit sparks. They have the same bloody colour in carbuncle acid." The steel-mill here mentioned is what has been used till very recently in coal-mines, confining of a wheel and spring, which is wound up and let in motion, whereby a constant collition of flint and steel is effected, eliciting a copious stream of sparks.

With the concluding remarks of Mr. Buddle's letter we can by no means agree, when he adds, "On the strength of my own experience in collieries thus circumstanced, I freely hazard my opinion, that any further application of mechanical agency towards preventing explosion in coal-mines would be ineffectual." Among the means enumerated by this gentleman, the very obvious one of depending on the greater specific levity of the carburetted hydrogen gas is entirely omitted;
omitted; nor is it even flatted, that the general inclination of the flrata present facilities for the ascent of the inflammable air, were requisite precautions taken to conduct it by channels to the mouth of the upcast pit, which in many situations might be done at a trifling expense.

The public have been given to understand, that an improved and complete system of ventilation, depending on this principle, had been introduced into some of the Staffordshire collieries; but on recent inquiry at the place, we were informed, that the method of ventilation proposed by Mr. Ryan had never been carried into practice to the full extent flatted, but considerable advantage had been derived from a partial application of the principle, by making channels near the roof of the mine for the escape of the inflammable gas.

Where the flrata rise regularly for a considerable extent, unbroken by faults, it appears easy to discharge the inflammable gas as fast as it is generated. The specific gravity of carbureted hydrogen is little more than one-half the weight of atmospheric air, being as 555 to 1000.

If, therefore, it were conducted along the roof by an unobstructed passage to the upcast shaft, it would rise and discharge itself.

Explosions not unfrequently take place at the upcast shaft, from the inflammable air passing near the fire placed at the bottom to rarefy the air and increase the circulation. The only expedient at present suggested is the use of charcoal, as the gas will not ignite at a red heat without flame; but charcoal does not promote so rapid a circulation of air as coal or wood, which produce smoke and flame. The carbonic acid gas generated by the combustion of charcoal, being also heavier than atmospheric air, would in some degree retard the ascent of air from the upcast shaft; and if a small particle of coal fell upon the charcoal fire, it would produce flame, which might cause an explosion.

A series of most interesting experiments was undertaken by Sir H. Davy in 1815, on the degree of inflammability of different admixtures of carbureted hydrogen when passed through small tubes or apertures, which led to the very important and unexpected result, that carbureted hydrogen, mixed with atmospheric air in the proportion which is most explosive, and then ignited, will not set fire to another portion of the same air, separated from it by a sheaf of small wire, the meshes of which amount to two hundred and fifty in the square inch. On this principle he constructed a lamp surrounded by a small wire-fie in the place of born or glass, having no aperture for the admission or transmission of air but through the meshes of the fie. This lamp, when lighted, was found to burn in explosive mixtures with perfect safety, the flame being confined within the lamp by the intervening wire-fie. This lamp has since undergone considerable improvements, and some of the objections to which it was first exposed have been removed. Important additions to it are still making by its illustrious inventor. For a full account of its construction and recent improvements, we must refer to the article Wire-Gauze Safety-Lamp.

VENTILATOR, a machine by which the noxious air of any clofe place, as an hospital, gaol, ship, chamber, &c., may be discharged and changed for fresb.

The noxious qualities of bad air have been long known; and no one has taken greater pains to let the mischiefs arling from foul air in a just light than Dr. Hales; who has also proposed an easy and effectual remedy by the use of his ventilators; his account of which was read to the Royal Society in May, 1741. In the November following, Mr. Triewald, military architect to the king of Sweden, informed Dr. Mortimer, secretary to the Royal Society, that he had in the preceding spring invented a machine for the use of his majesty's men of war, in order to draw out the bad air from under their decks, the length of which was 96, 172 cubic ffe of air in an hour, or at the rate of 21,173 tons in twenty-four hours. In 1742 he lent one of them, formed for a sixty-gun fhip, to France; which was approved of by the Royal Academy of Sciences at Paris; and the king of France ordered all the men of war to be furnished with the like ventilators.

The ventilators invented by Dr. Hales consist of a square box A B C D (Plate XVII. Pneumatics, fig. 1.) of any fize; in the middle of one side of this box a broad partition, or midriff, is fixed by hinges X, and it moves up and down, from A to C, by means of an iron rod Z R, fixed at a proper distance from the other end of the midriff, and passing through a small hole in the cover of the box up to R. Two boxes of this kind may be employed at once, and the two iron rods may be fixed to a lever F G (fig. 2.) moving on a fixed centre O; so that by the alternate raising and lowering of the lever F G, the midriffs are also alternately raised and depressed, by which these double bellows are at the same time both drawing in air, and pouring it out through apertures with valves made on the fane side with, and placed both above and below the hinges of the midriffs. In order to render the midriffs light, they are made of four bars lengthwise, and as many across them breadthwise, the vacant spaces being filled up with thin panes of fir-board; and that they may move to and fro with the greater ease, and without touching the sides of the boxes, there is an iron regulator fixed upright to the middle of the end of the box A C (fig. 1.) from N to L, with a notch cut into the middle of the end of the midriff at Z, so that the midriffs, in rising and falling, suffer no other friction than what is made between the regulator and the notch. Moreover, as the midriff Z X moves with its edges only one-twentieth of an inch from the sides of the box A B C D E, very little air will escape by the edges, and, therefore, there will be no need of leathern fides, as in the common bellows. The end of the box at A C is made a little circular, that it may be better adapted between A and C to the rising and falling midriff; and at the other end, X, of the midriff, a fip of leather may be nailed over the joints, if needful. The eight large valves, through which the air is to pass, are placed at the hinges-end of the boxes B K (fig. 2.) as at 1, 2, 3, &c. The valve 1 opens inward to admit the air to enter, when the midriff is depressed at the other end, by means of the lever F G. And at the same time the valve 3 in the lower ventilator is shut by the compressed air which passes out at the valve 4. But when that midriff is raised, the valve 1 shuts, and the air passes out at the valve 2. And it is the same with the valves 5, 6, &c. of the other box; so that the midriffs are alternately rising and falling, and two of the ventilators drawing in air, and two blowing it out; the air entering at the valves 1, 3, 5, 6, and passing out at the valves 2, 4, 5, 7.

Before these last valves there is fixed to the ventilator a box Q Q N M (fig. 3.), as a common receptacle for all the air which comes out of these valves: which air passes off by the trunk P, through the wall of a building.

For a farther account of this machine we refer to the author himself, who gives a full detail of it, and of its manner of working. See Description of Ventilators, by Stephen Hales, D.D. Lond. 1743, 8vo.

The doctor has shewn the use of his ventilators very fully. As to ships, in particular, he observes, that the wind-fall (see Wind-Sail) made use of at sea to introduce fresh air between
between decks, is far from being sufficient for that purpose; nor can it be used with equal safety to the sick, and those who are sleeping, by means of the strength of the wind, which conveys the air with too much violence. But when the foul air is carried off by means of ventilators, notwithstanding the great velocity with which they throw out the air, which they may do at the rate of sixty turns in a minute, yet the motion of it downwards into the hold, to supply what was carried off, is so very gentle that it cannot be perceived; because the sum of all the open passages for it through the deck exceeds the opening of the trunk of the ventilator, in so great a proportion as 120 to 1, or more. Besides, in a calm, the wind-fail can do little or no good; nor when the ship is under sail, at which time the wind-fail is not used. And it is to be observed, that it is not the ventilating of a ship now and then with a wind-fail, when wind and weather serve, that will suffice; it ought to be done daily, if due regard be had to the health of the ship's crew. The great quantity of rancid noxious vapours, which are incessantly exhaling from a number of living human bodies, the fetid air that incessantly arises from the bilge-water, and from the hot, flagrant, putrid air in the hold, makes it very advisable to refresh so bad an air continually, either with the wind-fail, when that can be properly used, or else with ventilators, which are intended to supply the defects of the wind-fail.

Ventilators must also be of particular service in new ships, which are observed to be more unhealthy, on account of a greater quantity of fappy wreck which arises from new timber, and makes the confined air the more unwholesome.

They will also be an effectual preservative of horses in transports, where they are sometimes suffocated, when in a flom there is a necessity to fly the hatches down.

These ventilators will also drive out of the hold of a ship that dangerous vapour which arises from corn, which is so noxious, that sometimes they dare not venture into the hold, till after the hatches have been opened for some time.

Ventilation will not only be of service to preserve several kinds of goods, but also the timbers and planks of the hold itself, when laid up in ordinary, as well as when in use, and will make the air in the hold less noxious, though it will still be offensive to the smell, by reason of the bilge-water. But this may be made less offensive, by often letting in sweet water from the sea, and then pumping it out; which good practice ought to be continued, notwithstanding the use of the ventilators.

What is here said of the foul air of ships may be applied to that of mines, gaols, workhouses, barracks, and hospitals. In mines, ventilators may guard against the suffocations, and other terrible accidents arising from damp; which see. (See also Ventilation.) The air of gaols has been often known to be infectious; and we had a fatal proof of this, by the accident that happened some years ago at the felicions at the Old Bailey. To guard against the like for the future, as well as to preserve the health of the prisoners, a worthy magistrate, in 1753, had ventilators placed in Newgate, which were wrought by a windmill; and in the beginning of the year 1753, Dr. Hales gave an account of the good success attending the use of these machines, by a remarkable decrease in the usual mortality and sickness of that place.

Although the old prison at Newgate is now taken down, and a much more commodious one erected near the same spot, it may not be improper to give a brief account of the manner in which the ventilators of Dr. Hales were constructed, and how they were moved by the windmill annexed to them. The midriifs, b, b, (fig. 4.) of these two ventilators, two pair of which were laid upon one another, were each nine feet long, and four and a half wide, and moved up and down by the flat iron rods e, f, passing through the lower and upper ventilators, and through an iron plate at s, about three inches square; over which is another broader iron plate, with a wide hole in its middle, to give room for the iron rod at g to move sideway to and fro, with the under plate, the hole of which exactly fits the iron rod, so that no air can escape at g; and there are the like plates at i, the top of the ventilator; and at f, s, are joints, where the iron rods are fixed to the midriifs, by which means both are moved up and down at the same time; and the iron rods of both sides of the ventilators being fixed to one common lever at c, all the four midriifs are thereby alternately worked up and down and at the same time. The valve-holes w, v, a, x, &c. are twenty-three inches long, and fix and a half wide, covered with buckram glued on them, and move on rails of tamed sheep-skin, and fall on rails of wooden cloth naled round the valve-holes. A very large nofe (fig. 5.) is fixed with iron hooks b, b, to the ventilators i, i; and this nofe is divided into three spaces, the middle and largest of which, m m, receives all the foul air blown into it from the eight middle valves x, y, z, x, s. (fig. 4.), whence it passed through a trunk i, i, sixteen inches wide, through the leads of the prison, into the open air; the top of this trunk being covered with weatherboards to keep the rain out, and the middle valves hanging fo as to open outwards. The two other outer spaces of the nofe p p, receive the foul air, drawn into them, from the several wards, through the trunks p, p, and passing off into the ventilators, through the eight outer valve-holes v, y, v, &c., whose valves open inwards. In these outer partitions of the nofe there are two holes s, s, (fig. 5.) covered with boxes, in the bottom of each of which there is a large moveable valve, opening upwards, and towards the ventilators: these are made of such a weight, as to open only when all the trunks to the several wards are shut; by which the ventilators will always be supplied with air, so as not to endanger the breaking of the midriifs for want of it. These ventilators, about eighteen inches deep in the clear, were fixed in an upper room of Newgate, in order to be near the windmill on the leads, which worked them. From each of the outer midriifs there went a trunk, twelve inches in the clear within; and from these trunks, which descended through all the floors as far as a little below the ceiling of the ground rooms, leffer trunks, six inches square within, branched off, near the ceiling of every room; and extended more or less into the several wards, fo that when the foul air was drawn out of any ward, the fresh air might enter on the opposite side, and drive out all the foul air before it. By other contrivances with sliding shutters and handles, the several wards might be ventilated at such a time, or in such a degree, as was found necessary. In the case of a prison that is built with an open area in the middle, Dr. Hales observes, that the side of the prison which is opposite to the side where the ventilators are, may be commodiously ventilated in its turn, by having a round brick air-gutter under ground; through which the foul air of those wards might easily be drawn.

The windmill for working the ventilators was contrived to move with a small degree of wind, and to obtain a sufficient power in a small compass. In fig. 6, e is one of the crofs-trees which support the mill-pole d, and the braces c, c;
the crofs-trees rift on the blocks \(a, a\), and are fixed to the floor by strong iron bolts. The mill-pole \(d\), being hollow, admits the iron rod \(b\) to pass through from the crank of the iron axle-tree \(i\); the turning-frame \(g\) moves on the girdle \(f\), on which lies a broad circular iron plate, where is the bearing of the brads friction-wheels, whose iron axle-trees move in brads collars: the turning-frame \(g\) carries the axle-tree \(i\), and the falls \(i, k\), which are turned, so as always to face the wind, by the vane \(h\); the frame is kept from wrinkling by iron braces \(a, r\), represented by the double pricked lines. The crank \(x\) is six inches and a half long, and therefore gives a stroke of thirteen inches; but the lower end of the rod \(x\) is fixed to the lever of the ventilator (fig. 4.) at such a distance from the centre of its motion, as to raise and fall the midribs fifteen inches. The iron axle-tree extends forward, about two feet and a half beyond the face of the falls; from the extremity of which, \(i\), eight iron braces, \(l, l\), go to each arm, to which they are fastened by iron screw-bolts, which bind them and the iron circle of pricked lines \(m m\) (fig. 7.) fast together: the diameter of this circle is six feet, and the sweeps or arms of the mill \(k k\) are seven feet three inches long, and they are mortised into the drum \(y y\). A void space of about six inches breadth is left between the falls, as represented in the figure, that the direct current of the wind, as it passed through, might give a turn to the course of the wind; which otherwise, being driven obliquely from the face of the preceding fall, would be forced to act on the back of the following fall, and thereby abate the force, and retard the motion of the mill. The brake-pole (fig. 6.) is \(n\); and the single pricked line \(t\) at the end of it is the fword which is to clasp round the nave to stop the mill, by pulling the rope \(o; o\) is the bottom of the tree of the turning-frame; and \(p\) expresses the manner of screwing the brads into the axle-tree nearer and nearer, as they wear away. For a farther account of this machine, see Hales's Treatise of Ventilators, part ii. 1758, p. 32, &c.

Dr. Hales farther suggests, that ventilators might be of use in making salt, in order to which there should be a stream of water to work them, or they might be worked by a windmill, and the brine should be in long narrow canals, covered with boards or canvas, about a foot above the surface of the brine, in order to confine the stream of air, so as to make it act upon the surface of the brine, and carry off the water in vapours. Thus it might be reduced to a dry salt, with a faving of fuel, in winter and summer, or in a rainy or dry state of the air. Ventilators, he apprehends, might also serve for drying linen hung in low, long, narrow galleries, especially in damp, rainy weather, and also in drying woollen cloths, after they are full or dyed, and in this case they might be worked by the fulling water-mill. Ventilators might also be an useful appendage to malt and hop-kilns; in which case it would be beat to have the air-trunk enter the kiln about eighteen or twenty-four inches from the ground, and just opposite to the fire; but in order to prevent the air blowing too strongly on the fire, a screen of brick-work might be formed about a yard distant from the hole of the air-trunk, and a yard square; for thus the air from the ventilators would be better diffused through the whole kiln.

Dr. Hales is also of opinion, that a ventilation of warm dry air from the adjoining stove, with a cautious hand, might be of service to trees and plants in greenhouses; where it is well known that an air full of the rancid vapours, which perpiss from the plants, is very unkindly to them, as well as the vapours from human bodies are to men. For fresh air is as necessary to the healthy state of vegetables as of animals.

The larger kinds of ventilators used by the doctor, are ten feet long, five feet broad, and two feet high in the clear within. Those he used by way of experiment on board the Captain, a seventy-gun ship, were ten feet long, four feet three inches wide in the clear within, and thirteen inches deep; one inch of which being occupied by the midriif, there remained a foot depth for it to rife and fall in. A ventilator of these dimensions will, through a trunk of a foot square, drive the air at the rate of twenty-five miles in an hour, which is double of what Marjorib aligns for the velocity of a pretty strong wind.

But besides these large ventilators, the doctor made a smaller fort, four feet in length, sixteen inches in breadth, and thirteen inches deep, all in the clear within. This smaller ventilator may be very useful in preferring the bread in the bread-room of a ship, sweet and dry. Peas also, and oatmeal, which are apt to heat and spoil in casks, may be preserved, by putting them into a large bin, with a false bottom of hair-cloth laid on bars, by which fresh air may be blown upwards through them with these small ventilators.

Ventilators are also of excellent use for the drying of corn, hops, and malt. See Granary.

Gunpowder may be thoroughly dried, by blowing air up through it by means of ventilators.

What advantage dry gunpowder has over that which is damp, may be seen by the experiment mentioned in the article Gunpowder.

These small ventilators will also serve to purify moist easily and effectually the bad air of a ship's well, when there is occasion for persons to go down into it, by blowing air through a trunk, reaching within a yard of the bottom of the well, both for some time before, and during their stay there. They may be also made ufe of at sea to sweeten the air, and prevent sickness, &c. See Sea-Water.

Dr. Hales made also several trials for curing ill-tafted milk by ventilation.

For these and other uses to which they might be applied, as well as for a particular account of the construction and disposition of ventilators in ships, hospitals, prisons, &c. and the benefits attending them, see Hales's Treatise on Ventilators, part ii. p. 332, &c.

The ventilators in large ships, since the order for ventilating the fleet, illfused by the lords of the Admiralty in 1758, are fixed in the gunner's foore-room, and generally a-head of the foal-room. The foul air is carried up through the decks and foore-castle, near the fore-mast, sometimes afo and sometimes abaft it, but more frequently on its flatboard side; the lever, by which the ventilators are worked, is under the foore-castle in two-deck ships, and between the upper and middle decks in three-deckers, sometimes the lever is hung athwart-ships; in some ships afoe and aft; and in others oblique. The iron rod, which communicates the motion from the lever, passes through the partners of the fore-mast, and is connected with another lever, suspended at or near the middle; in some ships over the ventilators; in others under them, when it is found necessary to fix them up to the deck. The belt method to fave room is to place the ventilators over one another, with their circular ends together; the air-trunk should be so high above deck, that the men on deck may not be incommoded by the foul air which blows out of it; and therefore the trunk comes through the upper deck, near and behind the
The construction of twenty-gun ships being various, the
sizes of ventilators for these must be left to the direction of
the officers of the yard.

When the hold is to be ventilated from one end to the
other, the three doors of the gang-way into the gunner's
fore-room must be opened, and all the gratings on the gun-
deck be covered with tarpaulins, leaving all doors open,
whose rooms want ventilation, on the orlop and the wardroom
hatch. But when it is thought proper to ventilate between
decks, then the doors of the gang-way into the gunner's
fore-room must be shut, and the scuttle in the headmolt trunk or pipe upon the gun-deck must be opened; and all
the gratings of the middle deck, if the ship be a three-decker, or of the upper deck, if it be a two-deck ship, be
left with tarpaulins; and, if possible, one of the stern-
poles opened, or the aftermole hatch-way, or a scuttle on
purpose, through the deck, as near the stern as possible.

Hales's Treat. 2d. p. 97. &c.

The method of drawing off air from ships by means of
fire-pipes, which some have preferred to ventilators, was
published by Sir Robert Moray in the Phil. Trans. for
1665. These are metalline pipes, about two inches and
a half in diameter, one of which reaches from the fire-place
to the well of the ship; the other three branches go to other
parts of the ship; the stove-hole and anh-hole being closed
up, the fire is supplied with air through these pipes. The
defects of these, compared with ventilators, are particularly
examined by Dr. Hales, ubi supra, p. 113. See Air-Pipe
and Ship.

Mr. Erasmus King proposed to have ventilators worked
by the fire-engines in mines; and Mr. Fitzgerald has sug-
ggested an improved method of doing this, which he has also
illustrated by figures. See Phil. Trans. vol. I. p. 727, &c.

There are various ways of ventilating the air of rooms:
Mr. Tidd contrived to admit fresh air into a room, by
taking out the middle upper sash-pane of glafs, and fixing
in its place a frame-box, with a round hole in its middle,
about six or seven inches diameter; in which hole are fixed,
behind each other, two or three small timpaned windmills,
with falls of very thin broad copper-plates, which spread
over and cover the circular hole, so as to make the air which
enters the room to spread round in thin sheets sideways;
and thus not to inconvenience persons, by blowing directly
upon them, as it would do if it were not hindered by the
falls, which turn on the same axle-tree, each less than the
other. See LEBULUS.

This method of refreshing rooms is much approved of,
and used by many, not only in England, but also in other
countries. For other methods of ventilating ships, build-
ings, rooms, &c. see Air-Chamber, Bellows, Air-Pipe,
Centrifugal Wheel, and Wind-Sail.

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VENTILLA, in Geography, a town of Peru, in the
diocefe of La Paz; 9 miles S. of La Paz.

VENTININA, a term used by Paracelsus and his fol-
lowers, to express the art of divining, or knowing by the
winds and the courses the good or ill effects of fea-
lots.

VENTIS PONTIS, in Ancient Geography, a town of Hif-
pania, in Betica, in the vicinity of Caraccia.

VENTO, Matteo, in Biography, a Neapolitan, and dif-
icute of Rome. That, however, is not discoverable in his
compositions, which are easy and graceful, but have none of
the solidty or originality of his matter. Arriving in
England in 1764, at the inauspicious termination of the
reign of the Mingotti and Giardini at the Opera, he had
the good fortune to be engaged by Gordon and Vincent, the
new impresarios, to compose an opera, in which Manzoli was
to perform the principal part. The opera which he had to
fet was the Demofonte of Metaftafo, of which the airs are
natural, graceful, and pleasing; always free from vul-

garity, but never very new or learned. They were, how-
ever, in great public and private favour a considerable time.

In 1765, on the second arrival of Elfi, he fet Sofoniba,
in that easy and graceful stile which pleased more generally
than what professors would call better music. This drama
was repeated more frequently than any other during the
seafon, and the fongs, printed by the elder Wilkie, were
long after in favour at concerts and public places, as well as
among lifting miffes and dilettanti.

In 1767, on the arrival of Guarducci, Vento fet the
opera of "La Conquista del Mefico," of which the airs, like
theo of his former operas, were elegant and pleasing.
After this he seems to have fulfilled up his whole time in
teaching, till the arrival of Gabrielli, in 1776, when he fet
"La Veilale," in his usual easy stile; and when we told him
that his airs were somewhat too familiar for great fingers, he
saw, "God forbid I should ever compose difficult music!"

This composer's harpsichord pieces are flimsy, and so
much alike, that the invention, with respect to melody and
modulation of the eight fets, may be comprifed into two or
three movements. In these sonatas, as well as in his fongs,
he avoids vulgar paffages, and has a graceful, easy, and
flowing melody; but his bases are too like Alberti's, and
his treble too like one another, either to improve the hand
or delight the ear. He had a great number of scholars,
which ensured the efuture of printing his pieces, though
not their general and public favour. One or two fets of
such easy compositions would, indeed, have been very useful
to scholars in the firft fages of their execution; but eight
books, in which there is fo little variety, can never be
wanted, or indeed borne, but by thofe who think it right
implicitly to receive all their mafter's prefcriptions. His
duos for voices are alike trivial and unintereting, and the
opera of "Artaferse," which he composed for the Harmonic
Meeting, that was fet up in 1771 by the friends of
Guadagni and Giardini against the great Opera, under the
management of Mr. Hobart, which people of the firft rank
were fo impatient to hear in a clandestine way, as to run the
risk of pains and penalties for it, when published, appeared to
have lefs merit and novelty than any one of his former works.

Vento died in 1777, very rich, as there was every rea
on of industry, parfimony, and avarice, to imagine; but by
some strange disposition of his property and affairs, none of
his effects could be found at his death; and his widow and
her mother were left wholly delitute of support, but from
charity and the lowest menial labour.

VENTOSA, Spina. See SPINA Ventosa.

VENTOSITY, in Medicine. See Flatus and
Tympanites.
VENDO, in *Geography*, a cape on the N.E. coast of the island of Cabrera, in the Mediterranean. N. lat. 39° 10'. E. long. 2° 55'.

VENDOTIENNA, in *Geography*, an island in the Mediterranean, near the coast of Naples, anciently called Pandataria; according to sir William Hamilton, composed of volcanic matter thrown up by fire. It is now, as it seems to have been for ages, used as a place of banishment for criminals of a superior rank. Hitherto Julia, the daughter of Angitus, was sent, accompanied by her mother Seribonius. Some years the virtuous Agrippina was also confined here; and Octavia, wife of Nero, and daughter of Claudius, was at the instigation of Poppaxa banished and murdered in this island; 17 miles W. of Itchia. N. lat. 40° 53'. E. long. 13° 19'.

VENTRE, in Ancient Geography, a town of Italy; to which the Romans sent a colony about the year 351 from the foundation of Rome, according to Diodorus Siculus.

VENTRE, in *Geography*, a town of Hindoostan, in the circle of Eullore; 7 miles W. of Eullore.

VENTREJCI, in *Laee*, a writ for the search of a widow that fays she is with child, and thereby holds land from him that is, otherwise, next heir at law. See Jur of Matrons.

VENTREVRE, in *Geography*, a small island in the Atlantic, near the coast of France. N. lat. 47° 28'. W. long. 2° 59'.

VENTRICULUS, in *Anatomy*, the stomach. See STOMACH.

VENTRICAL Cordis, the two cavities of the heart, which propel the blood into the arteries; they are the right and left, or pulmonary and aortic. See HEART.

VENTRICLE or Ventricles of the Brain, cavities in different parts of its substance. They are the two lateral, right and left, called alve roumes; the 3d, 4th, and 7th, or ventricle of the septum lucidum. See BRAIN.

VENTRICULAR Arder. See ARDOR.

VENTRICALUS Sucettenturatius, in *Medicine*, a name given by some to the duodenum, when very large. Med. Eff. Edinb. abr. vol. ii. p. 34.

VENTRIOIQUEUS, Ventriloquus, compounded of venter, belly, and loquor, I speak, gontriloquis, or engastrimythus; a term applied to persons who speak inwardly; having a peculiar art of forming speech, by drawing the air into the lungs; so that the voice, proceeding out of the thorax, to a bystander seems to come from some distance, or in any direction. See ENGAstrIMYThUS.

Such a person we had formerly in London, a smith by profession, who had the faculty in such perfection, that he could make his voice appear, now, as if it came out of the cellar; and the next minute, as if in an upper room; and nobody present could perceive that he spoke at all. Accordingly, he has frequently called a person first up, then down stairs; then out of doors, then this way, then that, and all this without stirring from his seat, or appearing to speak at all.

We cannot forbear making a few extracts from this curious subject from a work, published in 1772, entitled "Le Ventriloque," &c. or the Ventriloquy, by M. de la Chapelle, canon royal at Paris, member of the Academies at Lyons and Rouen, and F.R.S. Some faint traces of the art or faculty of ventriloquism are to be found in the writings of the ancients; but many more are to be discovered there, if we adopt this author's opinion, that the recensions of many of the ancient oracles were actually delivered by persons poifting this quality, so very capable of being applied to the purport of priestcraft and delusion. The abbé de la Chapelle, having heard many surprising circumstances related concerning one M. St. Gille, a grocer at St. Germain-en-Laye, near Paris, whose powers as a ventriloquist had given occasion to many singular and diverting scenes, formed the resolution of seeing him. Being seated with him on the opposite side of a fire in a parlour on the ground-floor, and very attentively observing him, the abbé, after half an hour's conversation with M. St. Gille, heard himself called, on a sudden, by his name and title, in a voice that seemed to come from the roof of a house at a distance; and whilst he was pointing to the house from which the voice had appeared to him to proceed, he was yet more surprised by hearing the words "it was not from that quarter," apparently in the same kind of voice as before, but which now seemed to issue from under the earth, at one of the corners of the room. In short, this factitious voice played, as it were, every where about him, and seemed to proceed from any quarter, or distance, from which the operator chose to transmit it to him. To the abbé, though conscious that the voice proceeded from the mouth of M. St. Gille, he appeared absolutely mute, while he was exercising this talent; nor could any change in his countenance be discovered. He observed, however, that M. St. Gille pretend only the profile of his face to him, while he was speaking as a ventriloquist. On another occasion, M. St. Gille fought for shelter from a storm in a neighbouring convent; and finding the community in mourning, and enquiring the cause, he was told, that one of their body much esteemed by them had lately died. Some of the religious attended him to the church, and saw him the tomb of their deceased brother, spoke very feelingly of the scanty honours that had been bestowed on his memory; when suddenly a voice was heard, apparently proceeding from the roof of the choir, lamenting the situation of the defunct in purgatory, and reproaching the brotherhood with their want of zeal on his account. The whole community being afterwards convened into the church, the voice from the roof renewed its lamentations and reproaches, and the whole convent fell on their faces, and vowed a solemn reparation. Accordingly they first chanted a de profundis in full choir, during the intervals of which the ghost occasionally expressed the comfort he received from their pious exercises and ejaculations in his behalf. The prior, when this religious service was concluded, entered into a serious conversation with M. St. Gille, and inveighed against the absurd incredulity of our modern sceptics, and pretended philosophers, on the article of ghosts and apparitions; and M. St. Gille found it difficult to convince the fathers that the whole was a ludicrous deception.

Another instance of his extraordinary powers occurred in presence of a large party, consisting of commissaries from the Royal Academy of Sciences at Paris, and other persons of the highest quality, together with a certain lady, who was not in the secret, and who was only told, that an aerial spirit had lately established itself in the forest of St. Germain-en-Laye, and that they were assembled to enquire into the reality of the fact. When the party sat down to dinner, the aerial spirit began to address the lady with a voice that seemed to be in the air over her heads; sometimes he spoke to her from the trees around them, or from the surface of the ground at a great distance, and at other times from a considerable depth under her feet. The lady, being thus addressed for more than two hours, was firmly persuaded that this was the voice of an aerial spirit; and it was some time before she was deceived.

Several other instances of M. St. Gille's talents are related; and the abbé, in the course of his inquiries, was informed,
formed, that the baron de Mengen, a German nobleman, professed this art in a very high degree. He also relates, from Brodean, a learned critic in the sixteenth century, one of the singular feats performed by a capital ventriloquift in his time, who was called Louis Brabant, and was valet de chambre to Francis I. Our countryman Dickenfon speaks of him particularly, in his tract entitled "Delphi Phoenizizantes," printed in duodecimo at Oxford, in 1655. Louis had fallen in love with a beautiful and rich heiress, but was rejected by the parents as an unfit match, on account of his low circumstances. However, the father dying, he visited the widow; and on his first appearance in the house, she heard herself accoited in a voice resembling that of her dead husband, and which seemed to proceed from above.

"Give my daughter in marriage to Louis Brabant, who is a man of great fortune, and excellent character; I now endure the inexplicable torments of purgatory, for having refused her to him; obey this admonition, and I shall be soon delivered; you will provide a worthy husband for your daughter, and procure everlasting repose to the soul of your poor husband." The dread summons, which had no appearance of proceeding from Louis, whose countenance exhibited no change, and whose lips were close and motionless, was instantly complied with; but the deceiver, in order to mend his finances for the accomplishment of the marriage contract, applies to one Cornu, an old and rich banker at Lyons, who had accumulated immense wealth by usury and extortion, and was haunted by remorse of conscience. After some conversation on demons and spectres, the pains of purgatory, &c. during an interval of silence, a voice is heard like that of the banker’s deceased father, complaining of his dreadful situation in purgatory, and calling upon him to rescue him from hence, by putting into the hands of Louis Brabant, then with him, a large sum for the redemption of Christians in slavery with the Turks; threatening him at the same time with eternal damnation, if he did not instantly exorcise his own sins. Upon a second interview, in which his ears were saluted with the complaints and groans of his father, and of all his deceased relations, imploring him for the love of God, and in the name of every saint in the Calendar, to have mercy on his own soul and others, Cornu obeyed the heavenly voice, and gave Louis ten thousand crowns, with which he returned to Paris, and married his milftres. The mifer, being afterwards undeceived, was so mortified, that he took to his bed and died.

The abbé de la Chapelle takes occasion to account for all the circumstances attending Saul’s conference with the Witch of Endor, (which see,) and endeavours to shew that the speech, supposed to be addressed to Saul by the ghost of Samuel, actually proceeded from the mouth of the reputed forceress, whom he supposes to have been a capital ventriloquift. On these grounds he explains that transfiguration, and reconciles all its circumstances to the relation given of it in Scripture; where it is to be observed, that Saul is not said to have seen Samuel, but only to have heard a voice, which a ventriloquift can produce and transmit from any quarter, and with any degree of strength whatever. He afterwards brings many instances to prove, that the ancient oracles principally supported their credit, and derived their influence, from the exercife of this particular art. Many other learned men have given the same account of the witch of Endor. Though she is said to have a familiar spirit, yet the Hebrew word אֱלֹהֵי (Elæ) is rendered generally by the LXX ἐνσατισμένος, ventriloquif. Thus it is rendered in Isaiah, xix. 3. It appears from Plutarch (De Defect. Orac. tom. ii. p. 414.) Suidas (tom. i. ad voc. ἐνσατισμένος, p. 667.), and Josephus (Antiq. lib. xiv. p. 354.), that those who were anciently called ventriloquists had afterwards the name of Pythonizers, which implies a pretence to divination. Accordingly Python is the word used by the Vulgate version, i Sam. xxvii. 7, 8.; though not, as Voltaire seems to intimate, in the Hebrew; and, therefore, there is no ground for the conclusion which he draws, viz. that the history was not written till the Jews traded with the Greeks, after the time of Alexander, i. e. for determining the date of a Hebrew book from the use of a word in a Latin translation, made many hundred years after it, and not to be found in the original.

From baron de Mengen’s account of himself, and the observations made by M. de la Chapelle in his frequent examinations of M. St. Gille, it seems that the factitious voice produced by a ventriloquift does not (as the etymology of the word imports) proceed from the belly, but is formed in the inner parts of the mouth and throat. The art, according to this author, does not depend on a particular structure or organization of these parts, peculiar to a few individuals, and very rarely occurring, but may be acquired by almost any ardently desirous of attaining it, and determined to persevere in repeated trials. The judgments we form concerning the situation and diflance of bodies, by means of the senses mutually assisting and correcifg each other, seem to be entirely founded on experience (see Reid’s Inquiry into the Human Mind, p. 70. edit. 2.); and we pass from the sign to the thing signified by it immediately, or at leasf without any intermediate steps perceptible to ourselves. Hence it follows, that if a man, though in the same room with another, can by any peculiar modification of the organs of speech produce a sound, which in faintness, tone, body, and every other sensible quality, perfectly resembles a sound delivered from the roof of an opposite house, the ear will naturally, without examination, refer it to that situation and distance; the sound which the person hears being only a sign, which from infancy he has been accustomed, by experience, to associate with the idea of a person speaking from a house-top. A deception of this kind is practifed with success on the organ, and other musical instruments; and there are many similar optical deceptions.

Rolandus, in his Aglofpoligomographia, mentions, that if the mediaflnium, which is naturally a fingle membrane, be divided into two parts, the speech will seem to come out of the breast; so that the by-flanders will fancy the person poffefied.

For some facts and observations tending to explain the curious phenomena of ventriloquism by Mr. John Cough, we refer to the Manchester Memoirs, vol. v. part 2. p. 622. London, 1802, in which the ingenious author investigates the method whereby men judge by the ear of the position of honorous bodies relative to their own persons. This author observes in general, that a sudden change of direction in sound, our knowledge of which, as he conceives, does not depend on the impulse in the ear, but on other facts, will be perceived, when the original communication is interrupted, provided there be a sensible echo. This circumstance will be acknowledged by any person who has had occasion to walk along a valley, intercepting with buildings, at the time that a peel of bells was ringing in it. For the sound of the bells, instead of arriving coninually at the ears of a person so situated, in its true direction, is frequently reflected in a short time from two or three different places. These deceptions are in many cases so much diversified by the succesive interpositions of fresh objects, that the fieple appears, in the hearer’s judgment, to perform the part of an expert ventriloquift on a theatre, the extent of which is adapted to its own powers, and not to those of the human voice.
voice. The similarity of effect which connects this phenomenon with ventriloquism convinced the author, whenever he heard it, that what we know to be the cause in one instance is also the cause in the other, viz. that the echo reaches the ear, while the original sound is intercepted by accident in the case of the bells, but by air in the case of the ventriloquist. In order that the cause which gives rise to the amusing tricks of this uncommon talent may be pointed out with the greater clearness, it will be proper to describe certain circumstances that take place in the act of speaking, because the skill of the ventriloquist seems to confound in a peculiar manner of them. Articulation is the art of modifying the sound of the larynx, by the affiduity of the cavity of the mouth, the tongue, teeth, and lips. The different vibrations, which are excited by the joint operation of several organs in action, pass along the bones and cartilages, from the parts in motion to the external teguments of the head, face, neck, and chest; from which, a succession of similar vibrations is imparted to the contiguous air, thereby converting the superior moiety of the speaker's body into an extensive feat of sound, contrary to general opinion, which supposes the passage of the voice to be confined to the opening of the lips.

When an orator addresses an audience in a lofty and spacious room, his voice is reflected from every point of the apartment, of which all present are made sensible by the confused noise that fills up every pause in his discourse; nevertheless, every one knows the true place of the speaker, because his voice is the prevailing sound at the time. But were it possible to prevent his words from reaching any one of the audience directly, what would then follow? Undoubtedly a complete case of ventriloquism would be the consequence, and the person so circumstanced would transport the orator, in his own mind, to the place of the principal echo, which would perform the part of the prevailing sound at the infant. This he would be obliged to do, because the human judgment is bound, by the dictates of experience, to regard the person as inseparable from the voice; and the deception in question would be unavoidable, being produced by the same concurrence of causes which makes a peal of bells, situated in a valley, seem to change place in the opinion of a traveller. It is the business of a ventriloquist to amuse his admirers with tricks resembling the foregoing delusion; and it will be readily granted, that he has a subtle sense, highly corrected by experience, to manage, on which account the judgment must be cheated as well as the ear. This can only be accomplished by making the pulsed, constituting his words, strike the heads of his hearers, not in the right lines that join their persons and his. He must, therefore, know how to disfigure the true direction of his voice, because the artifice will give him an opportunity to substitute almost any echo he chooses in the place of it. But the superior part of the human body has been already proved to form an extensive feat of sound, from every point of which the pulses are repelled, as if they diverged from a common centre. This is the reason why people, who speak in the usual way, cannot conceal the direction of their voices, which in reality fly off towards all points at the same instant. The ventriloquist, therefore, by some means or other, acquires the difficult habit of contracting the field of sound within the compass of his lips, which enables him to confine the real path of his voice to narrow limits. For he, who is master of the art, has nothing to do but to place his mouth obliquely to the company; and to dart his words, if the expression may be used, against an opposing object, whence they will be reflected immediately, so as to strike the ears of the audience from an unexpected quarter, in consequence of which the reflector will appear to be the speaker. Nature seems to fix no bounds to this kind of deception, only care must be taken not to let the path of the direct pulses pass too near the head of the person who is to be played upon; for, if a line, joining the exhibitor's mouth and the reflecting body, approach one of his ears too nearly, the divergency of the pulses will make him perceive the voice itself, instead of the reverberated sound.

The author has given the following narrative of a ventriloquist, whom he attended in the exercise of his art. His audience was arranged in two opposite lines, corresponding to the two sides of a long narrow room. The benches on which they were seated reached from one end of the place to the middle of it, the other part remaining unoccupied. The seats exhibited by him were the three following. First: he made his voice come from behind his audience, but it never seemed to proceed from any part of the wall, near the heads of the people present; on the contrary, it was always heard resembling the voice of a child, who seemed to be under the benches. He filled during the time of speaking in a floating posture, having his mouth turned towards the place from which the found issued; so that the line, joining his lips and the reflecting object, did not approach the ears of the company. Second: advancing into the vacant part of the room, and turning his back to the audience, he made a variety of noises, that seemed to proceed from an open cupboard which filled directly before him, at the distance of two or three yards. Third: he placed an inverted glass on the hands of his hearers, and then imitated the cries of a child confined in it. His method of doing it was this; the upper part of the hearer's arm laid close along his side; then the part below the elbow was kept in a horizontal position, with the hand turned downwards, which was done by the operator himself. After taking these preparatory steps, the man bent his body forwards in a situation which prevented the profile of his face nearly to the front of his hearer, whilst his mouth pointed to the cup; in which posture he copied the voice of a confined child so completely, that three positions of the glass were easily distinguished by as many different tones, viz. when he pressed the mouth of the cup close against the palm, when one edge of it was elevated, and when the vessel was held near the hand, but did not touch it. The second and third instances of ventriloquism afford strong proofs, that this delusive talent is nothing more than the art of substituting an echo for the primary sound; for, besides the change perceivable in the direction of the voice, it was found to be blended with a variety of secondary sounds; such as we know by experience are produced, as often as a noise of any kind issues from a cavity.

The method of preventing the vibration of the vocal organs from reaching the external teguments is still wanting, as our author acknowledges, to complete his theory of ventriloquism; and this, he presumes, can only be supplied by an adept in the art.

VENTURINE, or VENTURY, in geography, a small town of the county of Kerry, Ireland, situated on a harbour to which it gives name, on the Atlantic ocean. It is 43 miles W. of Dingle. VENTURINE, or ADVENTURINE, is sometimes used for the finest and flenderest gold wire, used by embroiderers, &c.

When reduced into powder, as fine as it can be clipped, or filed, this powder may be wrought on the first layer of pure varnish, made use of in japanning, after the varnish is dry, in order to lay any colour over it.

VENUE, or VENEW, in Law, a neighbouring or near place. Locus quem vicini habent.

Thus
VEN

Thus we say, twelve of the affines ought to be of the same venue where the demand is made.

In transitory actions, the courts will very often change the venue, or county, in which the cause is to be tried. The statute 6 Ric. II. cap. 2. having ordered all writs to be laid in their proper counties, this, as the judges conceived, empowered them to change the venue, if required, and not to infilt rigidly on abating the writ, which practice began in the reign of James I.; and this power is diiferentially exercised, so as not to cause, but prevent a defect of justice. Therefore the court will not change the venue to any of the four northern counties, previous to the spring circuit; because there the affines are held only once a year, at the time of the summer circuit. And it will sometimes remove the venue from the proper jurisdiction, (especially of the narrow and limited kind,) upon a suggestion, duly supported, that a fair and impartial trial cannot be had therein. Blacklt. Comm. book iii.

VENUS, in Astronomy, one of the inferior planets; denoted by the character ♈.

Venus is easily distinguished by her brightness and whiteness, which exceeds that of all the other planets; and which is so considerable, that, in a dusky place, the projects a sensible shadow. Her place is between the earth and Mercury.

She constantly attends the sun, and never departs from him above 47° 48' or 44° 57'. If S be the sun (Plate XXI. Astronomy, fig. 8.), E the earth, V Venus or Mercury, and E V a tangent to the orbit of the planet, then will the angle S E V be the greatest elongation of the planet from the sun; which angle, if the orbits were circles having the sun in their centre, would be found by saying, E S : S V :: rad.: sin. S E V. But the orbits are not circular, in consequence of which the angle E V S will not be a right angle, unless the greatest elongation happens when the planet is at one of its apsides. The angle S E V is also subject to an alteration from the variation of S E and S V. The greatest angle S E V happens, when the planet is in its aphelion, and the earth in its perigee, and the leaf angle S E V, when the planet is in its perihelion, and the earth in its apogee. M. de la Lande has calculated these greatest elongations, and finds them 47° 48' and 44° 57' for Venus, and 28° 20' and 17° 36' for Mercury. If we take the mean of the greatest elongations of Venus, which is 46° 22.5', it gives the angle V S E = 43° 37.5'; and as the difference of the mean daily motions of Venus and the earth about the sun is 37', we have 37': 43° 37.5': 1 day: 70.7 days, the time that would elapse between the greatest elongations and the inferior conjunction, if the motions had been uniform, which will not vary much from the true time. See Elongation.

To find the position of a planet when stationary. Let S be the sun (fig. 9.), E the earth, P the contemporary position of the planet, X y the sphere of the fixed stars, to which we refer the motions of the planets; let E F, F Q, be two indefinitely small arcs described in the same time, and let E P, F Q, produced, meet at L: then it is manifest, that whilst the earth moves from E to F, the planet appears stationary at L; and on account of the immense distance of the fixed stars, E P L, F Q L may be considered as parallel. Draw S E, S F E, S F, S P, and S Q; then, as E P and F Q are parallel, the angle Q F S = P E S = P E S = E S F, and S P F = S Q F = S F Q = P S Q; that is, the contemporary variations of the angles E and P are as E S F : P S Q, the contemporary variations of the angular velocities of the earth and planet, or, (because the angular velocities are inversely as the per- 

odic times, or inversely in the sesquiplicate ratio of the distances) as $S \frac{P^3}{P^3}$ : $S \frac{E^3}{E^3}$, or (if $S \frac{P}{S} : S \frac{E}{E}$ :: $a : i$) as $a^2 : 1^2$. But sin. S E P : sin. S P E being as $S \frac{P}{S} : S \frac{E}{E}$, or $a : i$, the contemporary variations of these angles will be as their tangents. Hence, if $x$ and $y$ be the sines of the angles S E P and S P E, we have $x : y :: a : i$, and 

$$
\frac{x}{\sqrt{1-x^2}} = \frac{y}{\sqrt{1-y^2}} :: a^2 : 1, \text{ whence } x^2 = \frac{a^2 - a^2}{a^2 - 1} = \frac{a^2 + a}{a + 1}, \text{ and } x = \sqrt{\frac{a^2 + a + 1}{1}}.
$$

The planet's elongation from the sun, when stationary.

Ex. If P be the earth, and E Venus; and we take the distances of the earth and Venus to be 100000 and 7233, we find $x = 0.48264$ the sine of 28° 51' 50", the elongation of Venus when stationary, upon the supposition of circular orbits.

For eccentric orbits, the points will depend upon the position of the apsides and places of the bodies at the time. We may, however, get a very near approximation thus. Find the time when the planet would be stationary, if the orbits were circular, and compute for several days, about that time, the geocentric place of the planet, so that you get two days, on one of which the planet was direct, and on the other retrograde, in which interval it must have been stationary, and the point of time when this happened may be determined by interpolation.

To find the time when a planet is stationary, we must know the time of its opposition, or inferior conjunction. Let m and n be the daily angular velocities of the earth and planet about the sun, and $v$ the angle P S E, when the planet is stationary; then $m - n$, or $n - m$, is the daily variation of the angle at the sun between the earth and planet, according as it is a superior or inferior planet; hence, $m - n$, or $n - m$, : $v :: 1$ day : $v$, or

$$
\frac{v}{m - n}, \text{ the time from opposition or conjunction to the stationary points both before and after. Hence, the planet must be stationary twice every synodic revolution.}
$$

Ex. Let P be the earth, E Venus; then the angle S P E = 20° 51' 50"; therefore, P S E = 1°; also, $n - m = 37'$; hence, $37'$ : $13'$ :: 1 day : 21 days, the time between the inferior conjunction and stationary positions.

If the elongation be observed when stationary, we may find the distance of the planet from the sun, compared with the earth's distance, supposed to be unity. For $x^2 = a^2$; hence, $a^2 + x^2 - 1 \times a = \frac{x^2}{x^2 - 1} = \frac{x^2}{x^2 - 1}$

$$a = i^2; \text{ consequently, } a = \frac{1}{4} i^2 + \frac{1}{4} i^2 \text{ upon the supposition of circular orbits.}
$$

A superior planet is retrograde in opposition, and an inferior planet is retrograde in its inferior conjunction; for let E be the earth (fig. io.), P a superior planet in opposition; then, as the velocities are as the inverse square roots of the radii of the orbits, the superior planet movesslowest; hence, if E F, P Q, be two indefinitely small contemporary arcs, P Q is less than E F, and on account of the immense distance of the sphere y Z of the fixed stars, P Q muft cut E P in some point x between P and m, consequently the planet appears retrograde from m to n. If P be the earth, and E an inferior planet in inferior conjunction, it will appear
pear retrograde from \( v \) to \( w \). These retrograde motions must necessarily continue till the planets become stationary. Hence, a superior planet appears retrograde from its stationary point before opposition to its stationary point after; and an inferior planet, from its stationary point before inferior conjunction to its stationary point after.

When Venus appears west of the sun, that is, from her inferior conjunction to her superior, she rises before him, and is called Phosphorus, or Lucifer, or the Morning Star; and when she appears east of the sun, that is, from her superior conjunction to her inferior, the fets after him, or shines in the evening after he sets, and is called Hesperus, or Vesper, or the Evening Star: being each in its turn for two hundred and ninety days.

To delineate the appearance of a planet at any time. Let \( S \) be the Sun (fig. 11), \( E \) the earth, \( V \) Venus, for example; \( aVb \) the plane of illumination perpendicular to \( SV \), \( cVd \) the plane of vision perpendicular to \( EV \), and draw \( a\nu \) perpendicular to \( c\nu \); then \( a\nu \) is the breadth of the visible illuminated part, which is projected by the eye into \( e\nu \), the vered fine of \( C = a \alpha \), or \( SVZ \), for \( SV \) is the complement of each. Now the circle terminating the illuminated part of the planet, being seen obliquely, appears to be an ellipse; therefore, if \( e\mu d \) represent the projected hemisphere of Venus next to the earth, \( m\mu \), \( c\mu \), two diameters perpendicular to each other, and we take \( e\nu \) the vered fine of \( SVZ \), and describe the ellipse \( m\nu \), \( v\mu \), \( e\nu \) is the axis minor, and \( m\nu v\mu \) will represent the visible enlightened part, as it appears at the earth; and from the property of the ellipse, this area varies as \( e\nu \). Hence, the visible enlightened part: the whole disc = the vered fine of \( SVZ \) : diameter.

Hence, Mercury and Venus will have the same phases from their inferior to their superior conjunction, as the moon has from the new to the full; and the same from the superior to the inferior conjunction, as the moon has from the full to the new. Mars will appear gibbous in quadratures, as the angle \( SVZ \) will then differ considerably from the two right angles, and consequently the vered fine will sensibly differ from the diameter. For Jupiter, Saturn, and the Georgion, the angle \( SVZ \) never differs enough from two right angles to make those planets appear gibbous, so that they always appear full-obliterated.

Dr. Halley proposed the following problem: To find the position of Venus when brightest, supposing its orbit, and that of the earth, to be circles, having the fun in their centre. Draw \( S\rho \) perpendicular to \( EVZ \), and put \( a = SE \), \( b = SV \), \( x = EV \), \( y = VR \); then \( b - y \) is the vered fine of the angle \( SVZ \), which vered fine varies as the illuminated part; and as the intensity of light varies inversely as the square of its distance, the quantity of light received at the earth varies as \( b - y \); but \( a^2 = b^2 + x^2 + 2xy \); hence, \( y = \frac{a^2 - b^2 - x^2}{2x} \); substitute this for \( y \), and we get the quantity of light to be as \( b - a^2 - b^2 - x^2 = 2bx - a^2 + b^2 + x^2 = \text{a maximum} \), put the fluxion = \( a \), and we get \( x = \sqrt{3}a^2 + b^2 - 2b \). Now, if \( a = 1 \), \( b = 0.72333 \), as in Dr. Halley's tables, then \( x = 0.43026 \); hence, the angle \( ESV = 22^\circ 21' \); but the angle \( ESV \), at the time of the planet's greatest elongation, is \( 43^\circ 42' \); hence, Venus is brightest between its inferior conjunction and its greatest elongation; also, the angle \( ESV = 39^\circ 44' \), the elongation of Venus from the sun at the same time, and \( \angle SVZ = VSE + VES = 62^\circ 52' \), the vered fine of which is \( 0.53 \), radius being unity; hence, the visible enlightened part: whole disc = \( 0.53 : 2 \); Venus, therefore, appears a little more than one-fourth illuminated, and answers to the appearance of the moon when five days old. Her diameter here is about \( 39^\circ \), and therefore the enlightened part is about \( 10^\circ.25 \). At this time, Venus is bright enough to cast a shadow at night. This situation happens about 36 days before and after its inferior conjunction; for, supposing Venus to be in conjunction with the sun, and when seen from the sun to depart from the earth at the rate of \( 37^\circ \) in 1 day, we have \( 37^\circ = 22^\circ 21' = 1 \text{ day} : 36 \text{ days} \); nearly, the time from conjunction till Venus is brightest.

If we apply this to Mercury, \( b = 0.3171 \), and \( x = 1.00058 \); hence, the angle \( ESV = 78^\circ 55' \); but the same angle, at the time of the earth's greatest elongation, is \( 67^\circ 13' \). Hence, Mercury is brightest between its greatest elongation and superior conjunction. Also, the angle \( ESV = 22^\circ 18' \), the elongation of Mercury at that time.

When Venus is brightest, and at the same time is at its greatest north latitude, it can then be seen with the naked eye at any time of the day, when it is above the horizon; for when its north latitude is the greatest, it rises highest above the horizon, and therefore is more easily seen, the rays of light having to come through a less part of the atmosphere, the higher the body is. This happens once in about eight years, Venus and the earth returning to the fame parts of their orbits after that interval of time. Vince's Elements of Astronomy.

The diameter of Venus is to that of the earth as \( 11.72 \) to 10 nearly, her apparent diameter equal to \( 59^\circ \), and real diameter equal to \( 9330 \) miles; her apparent diameter, when reduced to the mean distance of the earth, is, according to Dr. Herchel, \( 18^\circ.79 \), and her real diameter a little larger than that of the earth (see PLANET); her horizontal parallel about \( 30^\circ \); her distance from the sun is to that of the earth from the sun as \( 72333 \) to \( 100000 \), and her real distance is \( 68,891,456 \) miles; her excentricity is \( 0.05^\circ \) of her mean distance from the sun (see EXCENTRICITY); the inclination of her orbit to the plane of the ecliptic is \( 3^\circ 23' 35' \); her periodic course round the sun is performed in two hundred and forty-two days seventeen hours nearly; and her motion round her own axis in twenty-three hours, or, according to the observations of Bianchini, in twenty-four days eight hours: according to Dr. Herchel uncertain, but not so slow as twenty-four days. See Diamter, Distance, Excentricity, Node, Parallax, and Period. See also Planets, Planetarium, and Solar System.

Venus, when viewed through a telescope, is rarely seen to shine with a full face, but has phases just like those of the moon; being now gibbous, now horned, &c. and her illuminated part is constantly turned towards the sun, i.e. it looks towards the east, when Phosphorus; and towards the west, when Hesperus.

These different phases of Venus were first observed by Galileo, who thus fulfilled the prediction of Copernicus: for when this excellent astronomer revived the ancient Pythagorean system, affirming, that the earth and planets moved round the sun, it was objected that in such a case the phases of Venus should resemble those of the moon; to which Copernicus replied, that some time or other that resemblance would be found out. Galileo sent an account of the first discovery of these phases in a letter, written from Florence in 1611, to William de Medici, the duke of Tuscany's ambassador at Prague; desiring him to communicate it.
VENUS.

it to Kepler. The letter is extant in the preface to Kepler's Dioptrics, and a translation of it may be seen in Smith's Optics, p. 416.

Having related the observations which he had made, he adds, "we have hence the most certain, feasible decision and demonstration of two grand questions, which to this day have been doubtful and disputed among the greatest matters of reason in the world. One is, that the planets in their own nature are opaque bodies, attributing to Mercury what we have seen in Venus; and the other is, that Venus necessarily moves round the sun, as also Mercury, and the other planets; a thing well believed indeed by Pythagoras, Copernicus, Kepler, and myself, but never yet proved, as now, by ocular inspection upon Venus." He closes with explaining the eyphr that had been sent, in the following words: "Hae immatura à me frustra legitur, a y; i.e. Cynthiae figuris amalutor mater amorum, or, Venus imitates the phases of the moon."

M. Maraldi made several observations on Venus in 1729, but could perceive no spot; and, therefore, those observed by Bianchini must either have disappeared, or the air at Paris was not so clear as at Rome.

Martin Folkes, e.q. formerly president of the Royal Society, spoke of Bianchini with respect, as too accurate to make any mistakes in astronomical observations, and too honest to publish any thing that was not exactly agreeable to truth. See Nature of the Planets.

Sometimes Venus is seen in the disc of the sun, in form of a dark round spot. This happens when the earth is about her nodes at the time of her inferior conjunction. These appearances, called transits, happen but seldom. We have had two in the last century, viz. one in June 1761, and another in June 1769. The next will not occur before the year 1874. See Parallax.

The effect of the parallax being determined, for computing which Dr. Mackelyne proposed a new method in relation to the transit of Venus in 1769, the transit affords a very ready method of finding the difference of the longitudes of two places where the same observations are made. For compute the effect of the parallax in time, and reduce the observations at each place to the time, if seen from the centre of the earth, and the difference of the times is the difference of the longitudes. From the mean of sixty-three results from the transits of Mercury, Mr. Short found the difference of the meridians of Greenwich and Paris to be 9° 15'; and from the transit of Venus in 1761, to be 9° 10' in time.

Except such transits as these, Venus exhibits the same appearances to us regularly every eight years; her conjunctions, elongations, and times of rising and setting, being very nearly the same, on the same days, as before.

In 1762 and 1786, Cašini, with a telescope of 34 feet, thought he saw a satellitie moving round this planet, and distant from it about three-fifths of Venus's diameter. It had the same phases as Venus, but without any well-defined form; and its diameter scarcely exceeded one-fourth of that of Venus. Dr. Gregory (Ait. lib. vi. prop. 3.) thinks it more than probable that this was a satellitie; and supposes the reason why it is not usually seen, to be the unfitness of its surface to reflect the rays of the sun's light; as is the case of the spots in the moon: of which, if the whole disk of the moon were composed, he thinks, that planet could not be seen as far as to Venus.

Mr. Short, in 1749, with a reflecting telescope of 16½ inches focus, perceived a small star near Venus; with another telescope of the same focus, magnifying fifty or sixty times, and fitted with a micrometer, he found its distance from Venus about 10°; with a magnifying power of 240, he observed the star assume the fame phases with Venus; its diameter seemed to be about one-third, or somewhat less, of the diameter of Venus; its light not so bright and vivid, but exceeding sharp and well defined. He viewed it for the space of an hour, but never had the good fortune to see it after the first morning. Phil. Tranf. N° 459. p. 646, or Martyn's Abr. vol. viii. p. 268.

M. Montaigne, of Limoges in France, we are told in the Encyclopédie, art. Venus, preparing for observing the transit of 1761, discovered in the preceding May a small star about the distance of 20° from Venus, and its diameter was about one-fourth of the planet. He made other observations for several days, which were communicated to M. Bandounin, who read two memoirs on the subject to the Royal Academy of Sciences, in which he endeavoured to state the elements of the orbit of this satellitie; but it is to be considered, that Montaigne's telescope had no micrometer, and that his distances must be very vague and uncertain. If Venus has a satellitie, it must, according to Dr. Herchel, be less in appearance than a star of the eighth or ninth magnitude. Phil. Tranf. for 1795.

After all, it must be acknowledged, that Venus may have a satellitie, though it is difficult for us to see it. Its enlightened side can never be fully turned towards us, but when Venus is beyond the sun; in which case, Venus appears little bigger than an ordinary star, and, therefore, its satellitie may be too small to be perceived at such a distance. When the side is between us and the sun, her full moon has her dark side turned towards us; and when Venus is at her greatest elongation, we have but one half of the enlightened side of her full moon towards us, and even then it may be too far distant to be seen by us. But it was presumed, that the two transits of 1761 and 1769, would afford opportunity for determining this point; and yet we find that, although many observers directed their attention to this object, no satellitie was seen in the sun's disc; and, therefore, it is reasonable to conclude, that Venus has no satellitie.

The phenomena of Venus evidently shew the fality of the Ptolemaic system; for that system supposes, that Venus's orb, or heaven, inclines the earth, paffing between the sun and Mercury. And yet all our observations agree, that Venus is sometimes on this side of the sun, and sometimes on the other; nor did ever any body see the earth between Venus and the sun; which yet must frequently happen, if Venus revolved round the earth in an heaven below the sun.

Dr. Defaguliers contrived a planetarium to represent the phenomena of Venus, according to the discoveries of Bianchini; as did also Mr. Fergufon an orrery for the same purpose. The principal properties of these machines are the following: that the angle of the axis of the globe representing Venus makes, with the ecliptic, an angle of 15°; that the tropics are 75° from the equator; that the tropics are 15° from the equator; that the plane of a polar horizon for the longest day cuts the plane of the equator at an angle of 15°; that the sun's greatest declination is 75°; that there are but 94 days in every revolution round the sun; and that to bring the days to an even reckoning, every fourth year must be a leap year, which, taking in the four quarters of a revolution, will make the leap year in Venus confit of ten of her days, equal to 7½ months of our time; and that the long day for the north pole will contain 4½ apparent diurnal revolutions of the sun. For a detail and illustration of the phenomena resulting from these properties, see Defaguliers's Exp. Phil. vol. ii. p. 554, &c. Phil. Tranf. vol. xiv. p. 127, &c. &c. Fergufon's Astron. p. 8, &c. For the history and account of various instruments of this kind, see Orrery and Planetarium.

Tale
### Table I. — Epochs of the Mean Longitude of Venus.

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### Table II. — Mean Motion of Venus for Years.

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| 1700 | 12 6 21 22 | 0 9 4 3 | 0 6 12 |
| 1750 | 14 1 5 31 21 | 0 10 3 2 | 0 6 43 |
| 1800 | 14 9 1 31 21 | 0 11 2 0 | 0 7 14 |
| 1850 | 15 4 16 40 51 | 0 12 9 | 0 7 45 |
| 1900 | 16 0 3 4 29 | 0 12 5 8 | 0 8 16 |
| 1950 | 17 7 17 51 59 | 0 13 4 6 | 0 8 47 |
| 2000 | 18 3 7 51 59 | 0 14 3 5 | 0 9 18 |
| 2050 | 19 10 17 26 58 | 0 15 2 3 | 0 9 49 |
| 2100 | 20 6 3 50 36 | 0 16 2 | 0 10 20 |
| 2150 | 20 4 7 41 12 | 0 3 2 4 | 0 20 40 |
| 2200 | 6 11 31 48 | 0 4 3 9 | 0 31 0 |
| 2250 | 8 0 15 22 24 | 1 4 4 8 | 0 41 20 |
| 2300 | 100 6 19 13 0 | 1 2 0 | 0 51 40 |

| B. | 2350 | 200 1 8 26 0 | 2 4 2 | 0 1 43 20 |
| 2400 | 300 7 27 39 | 4 3 | 0 2 35 0 |
| 2450 | 400 2 16 52 | 5 2 4 | 0 3 26 40 |
| 2500 | 500 9 6 5 | 6 4 5 | 0 4 18 20 |
| 2600 | 6 35 18 0 | 8 6 | 0 10 20 |
| 2700 | 700 10 14 31 0 | 9 27 | 0 6 1 46 |
| 2800 | 800 5 3 44 | 10 48 | 0 6 53 20 |
| 2900 | 900 11 22 57 | 12 9 | 7 4 5 0 |
| 3000 | 1000 6 12 10 | 13 30 | 0 8 36 40 |
| 3100 | 1100 1 2 3 | 14 51 | 0 9 28 20 |
| B. | 3200 | 1200 7 20 36 0 | 15 12 | 0 10 20 0 |
| 3300 | 1300 2 9 49 | 17 33 | 0 11 11 40 |
| 3400 | 1400 8 29 2 | 18 34 | 0 12 3 20 |
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**TABLE III. — Mean Motion of Venus for Days.**

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In the Months January and February of a Bisextile Year, subtract 1 from the given Day of the Month.
### Table III. — continued.

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Table IV.—Mean Motion of Venus for Hours, Minutes, and Seconds.

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Table V.—Equation of the Orbit of Venus for 1780.

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The greatest Equation diminishes 25" in 100 Years. The others are proportional at the Rate of 0" for a Minute.
<table>
<thead>
<tr>
<th>Argument (Sig. I.)</th>
<th>Logarithm (Sig. III.)</th>
<th>Diff. Logarithm (Sig. IV.)</th>
<th>Logarithm of Sine (Sig. V.)</th>
<th>Diff. Logarithm (Sig. VI.)</th>
<th>Corr. Logarithm (Sig. VII.)</th>
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</table>

Note: This table shows the logarithms of the sine of angles from 0 to 90 degrees, with corrections for the difference in the logarithms of the sine of angles from 90 to 180 degrees. The corrections are for the equation of the mean anomaly, and the equations of the equation of the mean anomaly from 90 to 180 degrees.
**Table VII. — Heliocentric Latitude of Venus, with the Reduction to the Ecliptic.**

**Argument.** The Longitude of Venus — that of the Node.

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Explanation of the Tables.—Table I. contains the epochs of the mean longitude, of the aphelion and node. Table II. contains the mean motions of the same, for years. Table III. contains their mean motions for days. Table IV. contains their mean motions for hours, minutes, and seconds. Table V. contains the equation of the orbit for the year 1780; but this equation diminishes 25" in 100 years. Table VI. contains the logarithm of the distance of Venus from the sun, for the year 1780, with the corrections for 100 years, owing to a change of the eccentricity. Table VII. contains the heliocentric latitude of Venus, the reduction in longitude to the ecliptic, and the reduction of the logarithm of the distance, in order to get the curtaile distance from the sun.

The greatest equation (Table V.) of the orbit is 47² 20"; and this diminishes at the rate of 25" in 100 years; that is, the diminution for every minute of the equation is 25.0.5; we shall, therefore, take the secular diminution at the rate of 0.5 for every minute of the equation; thus, if the equation be 16', the diminution is 4" for 100 years; and for any other number of years, the diminution is in proportion. For any time before 1780, this correction must be added to the equation.

In Table VI. there is a small table for the correction of the logarithms of the distance of Venus from the sun, for 100 years; entering it with the mean anomaly of Venus, and applying the correction according to the sign, for any time after 1780; but with a contrary sign, before 1780.

To find the heliocentric Latitude and Longitude of Venus, and the Logarithm of her Distance from the Sun.—From Table I. take out the epochs of the mean longitude, the aphelion and node, for the given year; and place them in a horizontal line. But if the given year be not found in that Table, take the nearest year preceding the given year, as an epoch, and take out as before; under which (Table II.) place the mean motion in longitude, of the aphelion and node, answering to the number of years elapsed since the epoch, to the given year.

Under these, write down (Table III.) the mean motions of the fame, for the given day of the month.

Under these, write down (Table IV.) the mean motions of the fame, for the given hours, minutes, and seconds.

Add together the numbers in the several columns, reducing 128, or any multiple thereof, if they occur, and you get the mean longitude, places of the aphelion and node, for the given time.

Subtract the longitude of the aphelion from the mean longitude, and the remainder is the mean anomaly.

With the mean anomaly enter Table V., and take out the equation of the orbit with its proper sign, making proportion for the minutes and seconds, if there be any. But this requires a correction, at the rate of 0.5 for every minute of the equation for 100 years; and for any other time, the correction will be in proportion; to be subtracted after 1780, and added before that time.

Apply the equation with its proper sign to the mean longitude, and you get the longitude on the orbit, from the mean equinox.

From the longitude of Venus in her orbit, subtract the longitude of the node; and you have the argument, called the Argument of Latitude.

To the longitude on the orbit, apply the reduction (Table VII.) with its proper sign, and you have the longitude upon the ecliptic, from the mean equinox.

To the longitude thus found, apply the nutation with its proper sign, and you get the true longitude of Venus on the ecliptic, from the true equinox.

With the argument of latitude enter Table VII., and take out the latitude, making proportion for the minutes and seconds, if necessary; and this is the true heliocentric latitude of Venus.

With the mean anomaly of Venus enter Table VI., and take out the logarithm of her distance from the sun, making proportion for the minutes and seconds, if necessary. But this must be corrected by the small Table, to be entered with the mean anomaly, and you get the correction for 100 years; and for any other time, the correction will be in proportion, to be applied with a contrary sign, before 1780.

With the argument of latitude enter Table VII., and take out the reduction in the column under Sub. Log., making proportion for the minutes and seconds, if necessary; and subtract it from the logarithm of the distance last found, and you have the logarithm of the curtaile distance.

Ex.—On June 23, 1690, new style, at 1h 18' 11" mean time at Greenwich; to find the heliocentric latitude and longitude of Venus, and the logarithm of her distance from the sun.
VENUS.

Venus, in Chemistry, is used for the metal Copper; which see. Its character is $\varphi$; which, fay the adepts, expreffes it to be gold, only joined with fome corroeive and arfentical menstruum; which, removed, copper would be gold.

Venus is univerfally allowed, by the chemifs, &c. to be one of the moft powerful medicines in nature: of this, is faid to have been composèd the famous Butler's ftone, which cured mealf diseases by only licking it. Of this is composèd that noble remedy of Van Helmont, viz. the sulphur of vitriol, or ena vitrioli, fixed by calcination and cohabitation. Of the ena vitrioli of Venus is likewife composèd Mr. Boyle's arcanum, the colcotlar vitrioli.

It is certain copper is a powerful emetic, and an antidote againft poifons; for it is no fooner taken, than it exerts its force: whereas other vomitaries lie a good while in the stomack: but one single grain of ruft of Venus immediately vomits. Hence fyrups, that have flood over night in copper vessels, create a vomiting.

However, pure copper, in its metallic state, or calcined by fire, appears to be indiffolubile, and of no confiderable effect, in the bodies of animals: but diffolved in the nitrous or marine acids, and cryftallized or exficcated by heat, it proves a strong caufive. Preparations of this kind, though formerly used, are now laid aside. Copper, combined with the vitriolic acid, or with vegetable acids, or corroded by the air, acts outwardly, as an efficacious dextergent and a gentle efcharotic, and internally as a virulent emetic and cathartic. Some have ventured on small dozes, as quick emetics for expelling poifons; but the end may be obtained by fels dangerous means.

It has been ali reckoned an excellent medicine in chronic cafes: hence a famous phyfician is recorded to have cured Charles V. of a dropfy by the ufe of copper.

A faturated folution of the metal in volatile ftirps is recommended by Boerhaave in disorders proceeding from an acid, weak, cold, phlegmatic caufe. He fays, that if three drops be taken in the morning in a glass of mead, and the dofe doubled every day, to twenty-four drops, it proves attenuating, warming, and diuretik: that by this medicine he once cured a confirmed afctic; though in other fimilar cafes it failed; that it is the only preparation of copper which does not prove emetic; and that it may be tried with safety. Dr. Lewis, however, is of opinion, that in confiderable dozes it would exert the fame virulent operation with the other foluble preparations or folutions of copper. A folid preparation of this kind, made by rubbing together in a glafs mortar two parts of blue vitriol, and three of the volatile falt, procure from falt ammoniac, till all effevercesence has ceafed, and then gently drying the concrete, is ordered in the late Edinburgh Pharmacopeia, under the name of cuprum ammoniacum. It has frequently been given with fuccefs in epileptic and convulsive disorders. Lewis. See Sulphate of Copper. See also Saffphrina Aqua, and Aqua Cupri Ammoniaci.

Venus is difsoluble by all the falts known, both acid, alkaline, and nitrous; nay, even by water and air, confidered as they contain falt.

It is from this common reception of all menstruums, that copper is called Venus, q. d. meretricus publica, a common prostitute: though others take the denomination to have been occafioned by its turning of a fea-green colour, when diffolved by acid. It muft be given internally, with great caution.

Venus, Crystals of. See Crystal, Verdegrease, and Copper.

Venus, Spirit of. See Acetic Acid.

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Venus.

Celestis, that is to say, the planet of that name; and Astarte, the wife of Adonis, whose worship was intermixed with that of the planet, or, which comes to the same, that Syrian Venus, the fourth in Cicero, fo celebrated in antiquity. The Phoenicians, in conducting their colonies into the islands of the Mediterranean sea, and into Greece, introduced thither the worship of this goddess. They floated first in the island of Cyprus, which lies next the coasts of Syria; and there the worship of this goddess was generally received. From hence they went to Cythera, an ile near the continent of Greece; there the Greeks began to traffic with them, and to get some knowledge of their religion; and this is the reason of their giving out, that it was near this island the goddess was seen for the first time, because it was there they came to hear of her first. A very convincing proof that the worship of Venus was established in that island, before it passed into the continent, is, that the temple of Cythera was accounted the most ancient of any that Venus had in Greece, as Pausanius remarks.

From Cythera the worship of this goddess passed into Greece; and as those who had brought it thither were by sea, the Greeks, who endeavoured to give every thing a marvellous dres, say she had sprung from the sea, and gave her the name of Aphrodite, a word which imports foam. This, no doubt, is the true explication of this fiction, and it is needless to search into it for any other mystery. The Greek poets embellished this fable according to their own fancy. Having heard of Astarte's passionate love of Adonis, they took care to apply this circumstance to their Venus; and, moreover, they considered Love as the son of this goddess, and gave her the three Graces for her daughters. In fine, they formed that love-lykeem, of which the ideas have served, in after-ages, to embellish the works of their brother-poets. A young virgin rises out of the foam of the sea, and appears upon a shell-fish; she sits down on a mount Cythera, where the flowers spring up under her feet; the Hours, charged with the care of her education, conduct her to heaven, where all the gods, charmed with her beauty, make love to her; she matches with Vulcan, the most deformed of all; she disgraces herself by her gallantries with Mars and Mercury; by the one she has Cupid, and by the other Anti-Cupid; Bacchus is her 'fiquire; in fine, she presides over marriages and gallantry; and, therefore, has a mysterious girdle given her, called the ceiuis of Venus, which not only makes herself amiable, but has virtue to kindle the flame of an extinguished passion, &c.

This was not all, they foisted into the history of the goddess Venus, most of the celebrate pieces of gallantry. Some beauty being surprized in an intrigue, gave rise to the adultery of Mars with Venus, and to the stratagem of Vulcan.

Venus, whatever might be the dishonourable ideas entertained concerning her, was nevertheless regarded as one of the principal deities; and as she patronized scandalous passions, she was worshipped in a manner worthy of her. Her temples, open to profligation, taught the corrupt world, that in order to pay due honour to the goddess of love, they were to have no regard to the rules of modesty. The virgins prostituted themselves publicly in her temples, and there the married women shewed as little reserve. Amathus, Cythera, Gnidus, Paphos, Idalia, and the other places especially consecrated to this goddess, were distinguished by the most infamous abuses.

Farther, as there were several Venusfs, her worship was not everywhere the same. In some places they only burned incense upon her altars; elsewhere they made her an offering of sweet odours, one ingredient of which was the flesh of a sparrow; in other places they sacrificed to her a white goat. The women had also a custom of confecting their hair to this goddess; and the tresses of Berenice, which she had vowed to Venus, were placed among the stars.

Among the flowers, the rose was particularly consecrated to this goddess, because this flower had been tinged with the blood of Adonis, whom one of its thorns had wounded, which changed it into red from white, which it was before this adventure. The myrtle, too, was dedicated to her, because it commonly grows upon the borders of the water where this goddess was born. The swans and sparrows were peculiarly consecrated to her, but above all the pigeons, from the fable which fets forth, that while this goddess was one day playing with Cupid, the little god would needs wager to gather more flowers than she, and a nymph named Periferta, having affilted the goddess, she won the wager, with which Cupid was so provoked, that he transformed the nymph into a pigeon. As there were several persons who bore the name of Venus, her worship was not every where the same.

Venus was known under several appellations and characters; derived either from the places where she was worshipped, or from some particular circumstances that had given rise to her worship. Accordingly we read of the Venus Amaltheia, Amica, Anaitis, Apturares or Deidamo, Aphrodite, Archia, Argynnis, Armata, Aurea, Barbarata, Bajfilia, Calypgia, Calvius, Clacixia, Colias, Cypria, Cytherea, Elephanta, Elysia, Erycina, Etaia, Genurtis, Hortensia, Improme, Libina, Marina, Nephis, Papia, Praxis, Ridenus, Verticordia, Vittoria, Zerynthia, &c. &c.

Praxiteles executed two statues of Venus, one clothed, bought by the inhabitants of Cos, and another naked, which he sold to the Cnidians. See ANACOMENES, and VENUS DE MEDICIS.

The Venus of M. MaffeI seems to have been formed in conformity to the well-known paffage of Terence,

"Sine Cerere & Baccho friget Venus."

The goddess in this statue is accompanied with two Cupids, and crowned with ears of corn, holding a thyrsus, wrapped about with leaves and clusters of grapes; and as she carries in her hand three arrows, she seems to teach us that her arrows fly more unerringly when Ceres and Bacchus concur. Pausanius informs us that he had seen in Elis a fine statue of Venus Urania or Celestia, whose feet rested upon the back of a tortoise; and another of terrestrial Venus, placing her feet upon a he-goat.

We have on medals the Venus Urania, or Celestis, with a star or sun, or celestial globe in her hand; and the Venus Paphia, almoft naked, leaning on a column, with a helmet and the arms of Mars in her hands, bearing an inscription Veneri Vitorici, or Veneri Generifici. She is sometimes seen armed, sometimes resting upon a dolphin, holding a pigeon in her lap, or with Adonis, accompanied by his dogs, or with Cupid and the three Graces; but more frequently rising from the sea, seated upon a shell borne by two Tritons, or upon a chariot drawn by two sea-horses, or by a female sea-goat, or rather he-goat; for, according to Pausanius, her statue, made by the famous statuary Scopas, was upon that animal, and in that cale she is accompanied by Nereids and Cupids, mounted upon dolphins, one of the Nereids holding a lute in her hand, and mounted upon a sea-centaur; but more frequently her chariot is drawn by swans or pigeons, birds consecrated to her. Sometimes the
she appears herself supported by a Triton, having a  
buckler in her hand, on which is represented a head;  
sometimes mounted upon sea-horses, the seems to  
skim over the waves of the sea, her head being covered  
with a veil which swells in the wind, with Cupid  
swimming at her side. An oar at the foot of the gods  
seems to represent the Venus Pelagia or Marine:  
and the figure which she holds in her hand, a cornucopia,  
expresses the blessings produced by maritime commerce.  
There is also a picture of the Venus Deified in the Barberini  
palace at Rome, which is one of the finest-coloured pictures  
that is left us by the ancients; the hair of whose head may be compared with Guido's,  
and the colouring of the flesh reminds us of Titian. Part of  
this picture is lost, and part restored by Carlo Marat.  
Venus is described by Statius (lib. i. fylv. v. 56.) much  
in the same manner as she is represented in the Barberini  
picture.  

We shall only add, that Venus is sometimes described by  
the poets of the third age under the character of the goddesses  
of jealousy, rather than as the goddesses of love; in which  
Valerius Flaccus (Argon. ii. v. 106.) and Statius (Theb.  
v. v. 69.) have drawn two very terrible pictures of her.  
Spence's Polymetis, p. 74.  

Venus de Medici, in the history of Ancient Sculpture,  
a famous statue of white marble, about five feet high,  
brought from the Medici palace at Rome to Florence, by order of  
duke Colmo III., and now standing in the great duke's  
palace. The hips, legs, and arms, were broken off by  
the removal of this statue; but they have been rejoined  
with an art, that renders their former separation imperceptible.  
The inscription on the base intimates that this  
was the work of Cleomenes, an Athenian, the son of  
Apollodoros; the pedestal is modern; the statue seems  
to bear a little forwards; the right knee advances a little;  
the left-hand is placed before that part which disfigure  
s the fexes, and the right across her breasts; yet  
without touching the body. The head inclines a little  
to the left shoulder; so that her face seems to be turned  
away a little from the observer: and from this circum-  
fstance some have taken occasion to remark, that the hair  
of the head of this Venus expresses three different passions;  
as you first approach her, you perceive avenion or denial  
in her look; as you advance a step or two nearer, she  
seems compliance; and one step more to the right, it is  
fair, turns into a little indius and insulating smile: but  
Mr. Spence does not allow that this account is justified by  
the statue itself.  

The attitude of the Venus de Medici is peculiarly graceful:  
that attitude may be described in two vers of  

"Ipsa Venus pubeum, quoties velamina ponit,  
Protegitur laeva semi-reducta manu."  

The bloom of youth, the pleasing softness of her look, and  
her beauty and modesty, seem to rival each other in the  
charms of her countenance. Her person is somewhat plump,  
and the flesh is so admirably executed, that it seems so soft  
as if it would yield to the touch. Time has given to the  
white marble a yellowish hue, though still in the fun-shine  
it is almost transparent: her hair is brown, which may be  
no more than the faded gilding not unusual among the  
ancients. The head, which is said to be too small in propor-  
tion to the other parts, is inspected by fome not to have  
been executed by the fame artist who made the body: this  
will ever be the standard of female beauty and softness:  
the breasts are also the finest that can be conceived, small,  
delicate, and delicate, suggesting an idea of softness, which  
no copies can imitate, and also of firmness: from the  
breasts, her shape begins to diminish gradually down to her  
waist; but with an exquisite fineness of shape, the Venus  
of Medici has what the Romans call corpus solidum, and the  
French the enbonpoint; and her waist in particular is not  
represented as flinled by art, but as exactly proportioned  
by nature to all the other parts of her body. There is  
also a tenderness and elegance in every other part of her  
form: her legs are neat and slender: the small of them is  
finely rounded, and her feet are little, white and pretty: so  
that the poiflesst all those fofter beauties which the poets  
have marked out in the female make; the teretes fura (Hor.  
lib. ii. od. iv. ver. 21.), and the pes caudius (Id. lib. iv.  
od. i. v. 27.), and exigus (Ovid. Am. lib. ii. el. iii. ver. 7.)  
and one may well fay of this statue, what one of the  
performers in Plautus's Epidicus (act v. sc. 1.) says of a  
complete beauty:  

"Ab unguiculi ad capillum sumnum, eft festiviffima."  

Though the Venus of Medici has not escaped cenfure,  
with regard to the smallness of her head and hips, the large-  
ness of the nofe, the depth of the partition along the  
verbrae of the back, the length of the fingers, which, except-  
ing the little finger on the left-hand, are without joints;  
and though, in comparing the parts separate, as the head,  
nofe, &c. of this statue, with those of others, the similar  
parts might be found even of superior workmanship; yet  
for such a combination of beauties, the delicacy of shape  
and attitude, and symmetry of the whole, it is univerfally  
allowed that the world do not afford its equal. This  
incomparable statue flands between two others, which in any  
other place would be esteemed admirable pieces: that on the  
right of the Venus de Medici is twice as big, with the  
golden apple in her hand, and is called Venus Vietrix; the  
other, by Hercules Ferrata, is diftinguifhed by the name of  
Venus Urania. Spence's Polymetis, p. 6, &c.  


Venus, in Heraldry, is used for the colour vert.  
Venus, in the Latinne sytem of Natural History, a  
genus of the Tellaces order of worms. See Concoology  
Venus, Mount of, Moni Veneris, among Anathomis, is a  
little hairy protuberance in the middle of the pubis of  
women; occasioned by the collection of fat under the skin in  
that place.  

Among chiromancers, the mount of Venus is a little emi-  
nence in the palm of the hand, at the root of one of the  
fingers.  

Venus's Comb, in Botany. See Scandian.  
Venus's Fly-Traps. See Dionea.  
Venus's Looking-Glafts. See Campanula and Specu-  
lum Veneris.  

Venus's Navel-Wort. See Cotyledon, n. 19, and Cy-  
nglossum, n. 18.  

Venus, Cape, in Geography, a cape on the coast of  
Otaheite. N. lat. 1° 29'. W. long. 149° 36'.  

VENUSIA, VENOSA, in Ancient Geography, a town of  
Italy, in Apulia, near mount Vultur, watered by a small  
river called Auidus. It is said to have been denominated  
Aphroditia. It became a Roman colony in 460 U.C. It  
was formerly a magnificent city, but its baths, theatres,  
and temples have been destroyed. It was the birth-place  
of Horace.  

VENUSTI, MARCELLO, in Biography. This painter  
was born at Mantua in 1515, and was a pupil of Pierino  
del Vaga. He is however far better known as the painter  
of several designs of Michael Angelo, (to which he gave a  
colour unknown to that great composer,) than by any ori-
original works of his own. The cardinal Farnefe engaged
him to copy the great work of the Last Judgment in the
Capella Scitina, upon a small scale, which he accomplished
very much to the satisfaction of M. Angelo, who in confe-
quency engaged him to paint an altar-piece for the Capella
de Cesi in the church of La Pace, from a design of his
own, of the Annunciation. There are several pictures in
England, which are called Michael Angelo's, that have
every appearance of being painted by Venuti. Some works
of his own are spoken of with respect, particularly the
Martydor of St. Catherine, in the church of S. Agolino;
and St. John in the Wilderneys, in St. Catherine alli Funari.
He died in 1576, aged sixty-one.

VENZONE, in Geography, a town of Italy, in the
country of Friuli, on the Tajoamento; 18 miles W.N.W. of
Friuli.

VEPELLUM, or Vepellum, in Ancient Geography, a
town of Africa, S. of Carthage, situated two leagues S.E.
of Almanza, which has still some vestiges of the Romans.

VEPRECUITAE, in Botany, the thirty-first natural order
among the Fragmenta of Linneaus, named from verpeps, a
brier or bramble, because the plants which compose this
order are plant shrubs, of humble growth. The genera
mentioned at the end of the Genera Plantarum are Datis,
Qualis, Dirca, Daphne, Gnidia, Lachnea, Pafferia, Siel-
tera and Thesium; to which Linneaus has added in manu-
script, Struthiola, Santalum (with a doubt whether it should
not rather be referred to the Bicorne), and Scleranthus.
No remark occurs, in Gifeke's publication of the Predica-
tiones of Linneaus, on this order. As far as concerns the
eight first named of the above genera, with Struthiola, it is
precisely analogous to Jussieu's Thymeae, see that article.
Thesium and Santalum belong to Mr. Brown's Scleranthae,
an order extracted from the Onagre and Elegani of Jussieu,
which the reader will find in its proper place. Scleranthus
seems naturally one of the Caryophylleae, notwithstanding
the insertion of its flatus into the calyx, which obliged Jussieu
to range it with his Portulaceae. Perhaps this decision may
partly be supported by the habit, and the aspect of the flower.

VEPRIS, Juff. 371, a name given by Commeron to
what is now called Scopolia; see that article.

VER-PUCERON, in Natural History, a name given to a
kind of insects which are fond of eating the puceron, and
destroy it in vast numbers.

They are thus called, as the ant-eater is, formica-leo, from
their destroying great numbers of them.

These ver-pucerons are a sort of worms produced from
the eggs of flies, and are of two principal kinds; the one
having legs, the other none.

When we observe the vast number of young produced
by every puceron, and the quick progres they make in
their multiplication, we are apt to wonder, that every plant
and tree in the world are not covered with them; but on the
contrary, when we observe the devastation these devourers
make among them, we are apt to wonder how any of them
escape at all, to perpetuate the species. These worms
indeed seem created for no other purpose but to destroy
them; and this they do in so violent a manner as is scarcely
to be conceived. As the flies of many kinds lay their eggs
on meat and other substances, which they know will afford
food for the young ones, when hatched from them: so the
parents of these worms lay their eggs on the branches and
leaves of trees loaded with pucerons, on which they know
they will feed. The worms produced from these are de-
vourers from the very instant they are hatched, and find
themselves placed in the midst of prey, being every way sur-
rounded by a nation of creatures which are their proper
food, and which are furnished with no weapons, either offen-
sive or defensive, and which never so much as attempt to
fly from them, but seem wholly ignorant of their danger,
till seized upon by the devourers. Reaumur's Hist. of In-

The flies, which are produced from these worms, are all
of the two-winged kind; but there are several different
species of them; the generality of them resemble wasps,
and have a very flat body. Goedart, who has described
some of these flies, was surprized to see them very small
when first produced from the chrysalis, yet growing very
large in a quarter of an hour's time, and that without
taking any nourishment; but this was only owing to their
several parts having been squeezed while in the chrysalis,
and expanding themselves when they were at liberty from
the compression. These are the changes of this kind of
leo-puceron; but the other devourer of these creatures,
which has six legs, is of a different kind, and indeed is in
itself reducible to several species, some of these fix-legged
worms becoming four-winged flies, and others a kind of
beetles. These, from their near resemblance to the fornicia-
leo, are by Reaumur distinctly called puceron-lions.

Ver-Polype, a name given by Reaumur, and some other
authors, to a species of water-worm, by no means to be
confounded with the creature called simply the polype, and
which is so famous for its reproduction of parts cut off,
and for many other singular properties.

This ver-polype is a species of water-worm, produced
from the egg of a tipula, and had this name given it from
some remarkable productions, placed at the anterior and
posterior parts of the body, which are supposed to have
some analogy with the parts of the sea-fish called the polypus.
These worms are found in muddy ditches, usually either
crawling upon, or buried in the mud. Reaumur's Hist.
Insects, vol. ix. p. 49.

Ver du Gard, in Geography, a town of France, in the
department of the Gard; 6 miles S.E. of Uzes.

VERA, in Ancient Geography, a town of Africa, in Media,
on an eminence, and strong by its situation.—Alfo, the name
of a river of Gaul.

VERA, in Geography, a town of Spain, in Navarre; 25
miles N. of Pamplona.—Alfo, a town of Spain, in the
province of Grenada; 34 miles N.E. of Almeria. N. lat.
37° 8'.—W. long. 2° 41'.—Alfo, a river of European Tur-
key, which runs into the gulf of Salonichi, near the mouth
of the Vardar.

VERA Billa. See Billa.

VERABADURGAM, in Geography, a town of Hindoo-
stan, in Myfors; 8 miles W.S.W. of Caveripatam.

VERACICI, ANTONIO, in Biography, uncle and mater
to Francesco Maria Veracini, the celebrated performer on
the violin, publifhed at Florence, in 1692, ten fonatas, the
usual number, till Corelli's time; and afterwards, "Sonate
da Chiefa," two fets; but this author not being possessed
of the knowledge, hand, or caprice of his nephew, his
works are now not sufficiently interfeting to merit further
notice, particularly as there was nothing marked or original
in his style; the harmony indeed was correct; but "much
may be right, yet much be wanting."

VERACINI, FRANCESCO MARIA, a native of Florence,
and contemporary with Tartini, who were regarded as the
greatest masters of the violin that had ever appeared; nor-
were their abilities confined merely to the excellence of
their performance, they extended to composition, in which they
both manifested great genius and science. But whatever re-
semblance there may have been in the professional skill of these
two masters, it was impossible for any two men to be more
dissimilar.
difimilar in disposition: Tartini was so humble and timid, that he was never happy but in obscurity; while Veracini was so foolishly vain-glorious as frequently to boast that there was but one God, and one Veracini.

Being at Lucca at the time of the 'Felicia della Croce', which is celebrated every year on the 14th of September, when it is customary for the principal professors of Italy, vocal and instrumental, to meet, Veracini entered his name for a solo concerto; but when he went into the choir, in order to take possession of the principal place, he found it already occupied by Padre Girolamo Laurenti, of Bologna; who not knowing him, as he had been some years in Poland, asked him where he was going? Veracini answered to the place of first violin. Laurenti then told him, that he had been always engaged to fill that post himself; but that if he wished to play a concerto, either at vespers, or during high masses, he should have a place assigned him. Veracini, with great contempt and indignation, turned his back on him, and went to the lowest place in the orchestra. In the act or part of the service in which Laurenti performed his concerto, Veracini did not play a note, but listened with great attention. And being called upon, would not play a concerto, but deigned the hoary old father would let him play a solo at the bottom of the choir, defiling Lanzetti, the violincellist of Turin, to accompany him; when he played in such a manner as to extort an e vivat! in the public church. And whenever he was about to make a cloze, he turned to Laurenti, and called out: "Cosi fiuona per fare il primo violino!!!" "this is the way to play the first fiddle." Many silly stories of this kind are handed about Italy concerning the caprice and arrogance of this performer, who was usually qualified with the title of Capo pazzo.

Veracini would give lessons to no one except a nephew, who died young. The only master he had himself in his youth, was his uncle, Antonio Veracini, of Florence; but by travelling all over Europe he formed a style of playing peculiar to himself. Besides being in the service of the king of Poland, he was a considerable time at different courts of Germany, and twice in England, where, during the time of Farinelli, he composed several operas; among which was "Adriano," in London, in the winter of 1735 and 1736, which had a run of twelve nights; and in 1744, "Il Eratore di Salomone," in which Monticelli performed.

Veracini's first arrival in England was in the year 1714, when in the advertisements of the time for the opera of Dorinda, it is said that "Signor Veracini, lately arrived, will perform symphonies;" and the same year, with the operas of Crefo, Arminio, and Ernanclla, solos on the violin were frequently performed by Veracini.

We saw and heard him perform in the year 1745, at Hickford's room, where, though in years, he led the band at a benefit concert for Jozze, the second fiddle, at the opera, in such a bold and masterly manner as we had never heard before. Soon after this, in returning to the continent, Veracini was shipwrecked, and lost his two famous Steiner violins, thought to have been the best in the world, and all his effects. He used to call one of his violins St. Peter, and the other St. Paul.

As a composer he had certainly a great share of whim and caprice, but he built his freaks on a good foundation, being an excellent contrapuntist. The peculiarities in his performance were his bow-hand, his shake, his learned arpeggios, and a tone so loud and clear, that it could be distinctly heard through the most numerous band of a church or theatre.

Veracini and Vivaldi had the honour of being thought mad for attempting in their works and performance what many a sober gentleman has since done unfencured; but both these musicians, happening to be gifted with more fancy and more hand than their neighbours, were thought infane; as friar Bacon, for superior science, was thought a magician, and Galileo a heretic.

VERA-CRUZ, in Geography, a sea-port of Mexico, in the province of Tlaxcala, with a secure harbour, defended by a fort, upon a rock of a neighbouring island, called St. John d'Alva, in the gulf of Mexico. This is fortified with 300 pieces of cannon; and signals are made from a high tower. This is a place of very great extent, and perhaps one of the most considerable in Spanish America for trade, it being the natural centre of the American treasure, and the magazine of all the merchandise from New Spain, or of that transported hither from Europe. It receives a prodigious quantity of East India goods over land from Acapulco, brought from the Philippine isles. Upon the annual arrival of the flota here from Old Spain, a fair is opened, which lasts many weeks, when this place may be said to be immensely rich. Its situation is unhealthy, from the hogs round it, and the barrancas of the soil. It parts the sea in a semicircle, and is inclosed with a fingle wall or parapet, fifty feet high and three broad, surmounted by a wooden palfafade much decayed. The wall is flanked with fixed felable battions, on square towers twelve feet high. On the shore to the S.E. and N.W. are two redoubts, with some cannon to defend the port. The houses are well built with stone and lime, and have wooden balconies. The streets are wide, well paved with pebbles, and kept in excellent order. The churches are much decorated with silver; and in the dwelling-houses, the chief luxury consists of porcelain and other Chinese articles. The principal inhabitants are merchants; but European commerce is mostly carried on at Xalapa. The population is about 7000 or 8000: the inhabitants are generally proud, insolent, and devout; but commerce is well understood, and here are seven or eight houses, each worth a million of dollars. The women are rarely handsome, and live in retirement; the only amusements being a coffee-houfe and processions, or religious masquerades, the penitents whipping themselves with much bloodshed. A charity of 30000 dollars to marry four poor girls has, as is usual in such cafes, reverted to the rich. The harbour of Vera-Cruz might offer anchorage to 40 or even 60 ships of war in four to ten fathoms; but the northern winds are terrible, and often drive vessels on shore. In the rainy season the marshes on the south are haunted by caymans, or alligators, from seven to eight feet in length, but innocent. The sea-fowl are innumerable, and the mosquitoes very troublesome. The north winds are said to be so violent, that the ladies are excused from going to mass; and these galessometimes load the walls with sand. In the rainy season the water regularly falls in the night. Earthquakes are frequent. Vera-Cruz having been taken and plundered several times by the Buccaneers, the Spaniards have built forts, and placed centinels along the coast; their ordinary garrison consisting only of 60 horse and two companies of foot; 180 miles E.S.E. of Mexico. N. lat. 19° 5'. W. long. 97° 26'.

VERA-CRUZ, a port in the bay of St. Philip and St. Jago, in Terra Australis del Espiritu Santo, discovered by Quiros in 1606, and, according to him, capable of containing 1000 ships, with clear foundings of black sand, and water from three feet to 40 fathoms.

VERA-CRUZ, OId, a sea-port of Mexico, in the province of Tlaxcala. This is the port where Cortez landed in 1519; 15 miles N. of Vera-Cruz. This is situated fabulously; and the river is full of caymans, so strong as to draw an ox under water. They are fond of the flesh of dogs. N. lat. 19° 20'. W. long. 97° 40'.
VERACUNDALORE, a town of Hindoostan, in the Carnatic; 20 miles S.W. of Bomrauzepolam.

VERAGILÀ, a small island in the gulf of Venice. N. lat. 44° 17'. E. long. 15° 32'.

VERAGRI, in Ancient Geography, a people of the Alps, in the Pennine valley. Caesar places them between the Nantuates and the Seduni.

IVERAGUÀ, in Geography, a province of Mexico, bounded on the N. by the gulf of Mexico, on the E. by the province of Darien, on the S. by the Pacific ocean, and on the W. by Costa Rica. This coast was first discovered by Columbus, in the year 1503, to whom it was granted, with the title of duke. To the river now called Veraaguà, he gave the name of "Verdes-aguàs," on account of the green colour of its water; or, according to others, because the Indians called it by that name in their language. But however that may be, it is from this river that the province derives its name. In 1538, the captains Gasper d'Espinoza and Diego de Alverza, renewed the discovery by land; but, being repulsed by prince Urraca, were obliged to content themselves with a settlement in the neighbourhood; and even here the Spaniards were not able to maintain their ground against the frequent incursions of the Indians; so that finding the absolute necessity of a stronger settlement, they built the city Santa Fé, on the spot where it now stands. This province, though geographically belonging to North America, is included within the kingdom or territory of Terra Firma. The country is rugged and mountainous, but abounding with beautiful and excellent woods, and having vales that afford rich parishes. The monkeys found here are small but beautiful, being of a buff-colour, with a white crown; but too delicate to be removed from their native home. It is said to rain here every day in the year; and the rain is attended with tremendous thunder and lightning, and produces torrents that defend with rapidity and violence from the mountains. Its gold-mines are rich, but little wrought, because every article must be carried on the shoulders of the Indians over steep mountains. The Doraces, and other savage tribes, live naked in the mountains, on roots and fruits; but several have been converted since the year 1760 by the Franciscans, who have founded some Indian villages. The capital of this province is called by the same name, and also St. Jayo de Veraguà (which feé); it is situated in a warm and moist climate, abounding in maize, yucca, a root of which bread is made, plantains, and cattle, but principally in swine. The natives dye their cotton of a rich and permanent purple, with the juice of a sea-fennel found on the coast of the Pacific, akin to the murex of the ancients; with which, and some gold from the mines, they carry on trade with Panama, and the provinces of the kingdom of Guatemala. Here is an elegant hospital; and fourteen villages are subject to the jurisdiction of this town, which is ruled by a governor.

VERAL, a river of Spain, which runs into the Aragon.

VERALA, in Ancient Geography, a town of Hilopia Citerior, between Calagurus and Triorum.

VERAMALLY, in Geography, a town of Hindostan, in the Carnatic; 18 miles S. of Tretchipemony.

VERANO AVE, or Ave de Verano, in Ornithology, the name by which the Portuguese in the Brazil call a large bird of the thrush kind, approaching to the size of a small pigeon, remarkable for its loud noise; and more commonly known by its American name guiranga.

VERANOCA, in Ancient Geography, a town of Asia, in Phœnicia.

VERAPATCHY, in Geography, a town of Hindostan, in the Myfore; 20 miles W.N.W. of Dindigul.

VERÀ-PAZ, a province of Mexico, in the domain of Guatemala, bounded on the N. by the province of Chiapà, on the E. by the bay and province of Honduras, on the S. by Guatemala, and on the W. by Soconusco; about 120 miles in length, and 74 in breadth. In one part of the country the air is healthy, in the other not. The country is subject to earthquakes, thunder, and nine months' rain. The soil is mountainous, yielding little corn, but abounding in forests of cedar, &c. in which are many wild beasts. The principal commodities are drugs, cocoa, cotton, wool, honey, &c.

VERÀ-PAZ, or CORAN, a town of Mexico, and capital of the province of Verà-paz, situated on a river which runs to the bay of Honduras; 600 miles S.E. of Mexico. N. lat. 15° 50'. W. long. 91° 14'.

VERATO, a town of Naples, in the province of Otranto; 4 miles S. of Alefiano.

VERATRUM, in Botany, which derive from verès atrum, truly black, because the root is, externally at least, of that colour; may more safely be left among those ancient names whose origin is unknown. It occurs in Lucrètius and Pliny, indicating some very active or poisonous plant; and is generally supposed synonymous with the ἄοντος Dioecedros λακτός of Dioscorides, itself rather doubtful, and whose particular designation is a contradiction to the above etymology. Whatever difficulties may attend the determination of the ancient verès atrum, this name is now universally applied to the genus we are about to describe, one of whose primitive species having nearly white, and the other as nearly black, flowers, the English appellations, of White and Black Helbor, suit them so well, as to efface all memory of old uncertainties.—Linn. Gen. 540. Schreb. 715. Willd. Sp. Pl. v. 4. 895. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 425. Pursh 242. Juss. 47. Tourn. t. 145. Lam. Ex. Illustr. t. 843. Grern. t. 18.—Clas, and order, Polygamy Monoea, or more properly Hexandria Trigynia. Nat. Ord. Coronarie, Linn. Junz, Juff. Melanthacae, Brown.

Gen. Ch. Cal. none, unless the corolla be taken for such. Cor. Petals five, elliptic-oblong, fessile, thinner at the margin towards the base, and finely ferrated or fringed in that part, permanent. Stam. Filaments five, inserted into the base of the petals, awl-shaped, converging round the germs, spreading at the fummit; anthers quadrangular, veri, attached by the back. Píl. Germs three, superior, oblong, compressed, crept, combined, terminating in three very short styles, with fimple spreading stigmas. Peric. Capsules three, oblong, crept, compressed, of one cell and one valve, bursting at their inner margins by which they are originally connected. Seeds several, obliquely imbricated, inserted into each margin of the capsule, oblong, compressed, winged at each end; the wing at the lower part rounded. Several flowers, on the same plant, have only rudiments of a píl.


Obf. This genus has been thought too near Melanthium, fee that article. The capsùles of the latter are fingle, of three cells, and in some species the cells burst externally, but this is not the case with M. frührichum, whose cells burst at the inner angle only. The subject wants revision. The habit of Melanthium, for the most part an African genus, is very unlike Verà-trum, the leaves being slender, and inflorècence more simple. The corolla is more coloured, with elongated claws; and though permanent, has less of the coriaceous nature of a calyx. Helonias, (fee that article,)
Veratrum.

1. *V. album*. White Veratrum, or Common White Hellebore. Linn. Sp. Pl. 1479. Wild. n. 1. Ait. n. 1. Jacq. Ann. t. 335. Fl. Dan. t. 120. Mill. C. t. 271. Mill. Ill. fl. t. 169. Woods. Med. Bot. t. 100. Helleborus praecox; Ger. Em. 440. Elleborum album; Matth. Valgr. v. 2. 555. —Panicle thrice compound. Petals ascending, elliptical. Native of alpine meadows in most parts of Europe, from Norway to Greece; but not of Britain. It is, of course, a hardy perennial in our gardens, where it has been cultivated time out of mind, flowering from June to August. The root is tuberous, black on the outside, with long, simple, white, cylindrical fibres. Stem from two to four or five feet high, robust, erect, simple, leafy, terminating in a large, branching, downy panicle, of innumerable greenish-white flowers, with little or no sepal, an inch broad, whose petals when in full perfection spread horizontally, but in fading return to their original ascending posture, becoming green, leafy, and coriaceous. The leaves are large, elliptical, entire, with many ribs, plaited, smooth, of a fine green; the uppermost becoming oblong or lanceolate bractea. Each partial flower-flute is also accompanied by an elliptic-lanceolate downy bractea, various in length. This flatly plant, accompanied by *Genista lutea*, makes a magnificent appearance in rich pastures on the alps of Switzerland and Savoy, where they both grow more luxuriantly than in gardens.—Mr. Sieber of Prague has sent us from the alps of Austria, under the name of "*V. viride Bernh.", what seems a greener-flowered variety of the album, and different from the following; but it is extremely difficult to decide on this point, without seeing the plants alive.

2. *V. viride*. Green Veratrum. Ait. n. 2. Wild. n. 2. Pursh n. 1. Bigelow Bot. 246. (V. album; Michaux Boreal.-Amer. v. 2. 249. Heloniæ viridis; Curt. Mag. t. 1096.) —Spikes panicked, dense, cylindrical. Petals ascending, elliptical. In swamps and on mountain bogs, from Canada to Carolinas, flowering in July. A flatly plant, from three to six feet high. Pursh. Dr. Bigelow, in his Flora Boissonianis, says this plant, not unfrequent in meadows and swamps about Bolton, is called Poke root, or Swamp Hellebore. It was cultivated in England by Peter Collinson, in 1742. The foliage and habit are like the preceding, but the panicle is larger and greener; its branches longer and more cylindrical, spiked, not racemose, each flower being nearly or quite sericeous. The petals are broader; their margins thickened and mealy about the base.

3. *V. nigrum*. Dark Veratrum. Linn. Sp. Pl. 1479. Wild. n. 3. Ait. n. 4. Jacq. Ann. t. 336. Curt. Mag. t. 963. (Helleborus albus praecox; Ger. Em. 440. f. 2.) —Clusters panicked, dense, cylindrical. Petals obovate, widely spreading; at length reflexed.—Native of dry mountainous situations, in Siberia, Hungary, Austria and Greece, flowering in July. Perfectly hardy in our gardens, where it blooms freely, and increases without any care, providing the soil be dry. It agrees with the first species in habit and leaves, but is rather taller, and is very remarkable for the dark purpleish-brown, almost black, hue of its flowers, which exhale a faint cadaverous scent. They compose long, cylindrical, steaking clusters, assembled into a long panicle, accompanied by narrow strap-shaped bractea in the lower part. Each flower is but half as broad as those of *V. album*, and the petals turn backward as they fade, becoming finally of a dull green.

4. *V. virginicum*. Virginian Veratrum. Ait. n. 3. (Melanthium virginicum; Linn. Sp. Pl. 483. Wild. Sp. Pl. v. 2. 266. Pursh 240. Helonis virginsca; Curt. Mag. t. 985. Aphydole alpins floridana, ramofo caulis, floribus ornithogali obololetis; Pluk. Amath. 49. t. 434. f. 8.) —Clusters panicked, loose. Petals elliptical, spreading, with two spots at the base; hairy at the back. —In low grounds, amongst luxuriant herbage, from New York to Carolina, flowering in June and July, perennial. Rather scarce in gardens, though tolerably hardy. The stem is from three to five feet high, downy. Leaves linear-lanceolate, folded, ribbed, pointed. Panicle pyramidal, of numerous, loofly racemose, many-flowered branches, whose partial flanks are about half as long again as the petals. Flowers green, with two brown spots on each petal. After being expanded for some time, they turn to a red-brown.

5. *V. parviflorum*. Small-flowered Veratrum. Michaux Boreal.-Amer. v. 2. 250. Wild. n. 4. Pursh n. 2. —Clusters panicked, with slender branches. Petals ovate-lanceolate, acute at each end. Leaves elliptical, flat, smooth.—On high mountains in Carolina, flowering in July. Flowers small, green. Root perennial. Pursh. The leaves are like those of *Veratrum*, but not so much furrowed, or pilate. Petals without glands. Inflorescence that of a Melanthium. Michaux. We have seen no specimen nor figure, neither of this nor the following.


7. *V. Sabadilla*. Caufic Veratrum, or Indian Caufic-Barlet. Ray. Bot. flac. 3. 1. 107. Wild. n. 5. (Cevadilla; Dale Pharmac. 286. Hordeum cauificum; Bauh. Flora, 2. 457, with a probable fictitious figure. Yztrinmpathi, feu Canis interfeclor, vel Hordeolum; Hern. Mex. 376, with an apparently authentic figure.) —Leaves linear-lanceolate, ribbed. Clusters simple, dense, foliary, terminal.—Native of the colder regions of Mexico. The leaves appear to be all nearly radical. Stem solitary, simple, erect, almost naked, three spans high. Clusters erect, cylindrical, a span long, nearly or quite simple. Flowers turned to one side, of a very dark purple. Petals ovate.—Retzius, who first introduced this plant into a scientific botanical work, found a specimen of the flowers, imported along with the seeds, in a druggist's shop. They answered to the character of a genuine *Veratrum*, as might be expected from the seeds and capsules, which we have occasionally met with, and whose qualities are analogous to those of *V. album*. But the learned proféfior never thought of tracing out the synonyms, or searching for any figures, of this little-known plant; which defect we have endeavoured to supply. For the medical properties of the seeds in question, see Cevadilla.

For *V. luteum*, Linn. Sp. Pl. 1479. Wild. n. 6, see *Helonia, n. 3*.

Veratrum, in Gardening, contains plants of the hardy, herbaceous, perennial kind, among which the species cultivated are, the white-flowered veratrum, or white hellebore (*V. album*); the dark-flowered veratrum (*V. nigrum*); and the yellow-flowered veratrum (*V. luteum*). The first sort has the stems three or four feet high, and branching out on every side almost their whole length; the branches and principal stem being terminated by spikes of flowers set very close together, which are of a greenish-white or herbaceous colour, and appear in July.

The second sort has the flanks rising higher, but the flowers are of a dark-red colour, which appear almost a month sooner.

The third sort has a large tuberos root with a single stem, about a foot high, having the flowers produced at the top, in a single thick close spike, which are small, and of a yellowish-white colour, appearing in June.
Method of Culture. — All these plants may be increased by feed and parting the roots.

The feed should be sown in the autumn or early spring, upon a bed or border of light earth, or in a box filled with the same sort of mould. When the plants are come up in the spring, keep them clear from weeds, and refreshed with water occasionally when the season is hot and dry; and in the following autumn, when the leaves decay, take them up carefully without injuring the roots, and plant them out about half a foot square in a fresh bed of light mould; and when they have remained in it till fit for flowering, they should be removed into the borders, clumps, or other parts.

This is, however, a tedious method, as they seldom flower in less than four years; therefore the root method is mostly what had recourse to.

The roots may be divided in autumn, when the leaves decay, and be planted out in a light, fresh, rich mould where they are to grow; they should not be removed oftener than once in about four years. The roots should not be parted too small.

These plants have a fine effect in the middle of large borders, clumps, and other similar situations, in pleasure grounds and other places by the singularity of their large furrowed leaves, and their different modes of flowering.

The first sort is much cultivated as a medicinal plant for the use of its root, as well as the black sort occasionally; in which situation the plants should be set out in beds or borders in any common parts of the ground.

Veratrum, in the Materia Medica. See Hellebore.

Mr. James Moore has suggested that a vinous infusion of the root of the veratrum album, or white hellebore, constitutes the active ingredient in the eau médicinale d'Huffen. Mr. Moore gives the following preparation: take of white hellebore-root, eight ounces; white wine, two pints and a half. The root is to be cut in thin slices, and infused for ten days, occasionally shaking the bottle. Let the infusion be then filtered through paper.

The dose of the mixture, in cafes of gout, may be from one fluid-drachm to three fluid-drachms.

VERB, in Grammar, a word serving to express what we affirm of any subject, or attribute to it; or, it is that part of speech, by which one thing is attributed to another, as to its subject; as the words is, underlands, hearts, believes, &c. This is, in other words, the definition of a verb adopted by Dr. Priestley in his Grammar. But this definition seems to include not only verbs, but likewise all adjectives, and abstract nouns signifying qualities; for when we say "God is good," or "Goodness belongs to God," do not the words "good" and "goodness" express what is affirmed of or attributed to the Deity? But if in this definition it is merely affirmed, that the essence of the verb confides in affirmation, it might have been expressed with greater precision, thus: "a verb is a word affirming something of, or attributing something to, a thing." It is, says Dr. Blair, the affirmation that seems to be that which Chiefly distinguishes the verb from the other parts of speech, and gives it its most conspicuous power. Hence there can be no sentence, or complete proposition, without a verb either expressed or implied; for whenever we speak, we always mean to affirm, that something is or is not; and the word which carries this affirmation, or affirmation, is a verb. This ingenious writer, however, seems to have improperly included time as one of the three things implied in all verbs, adding this to the attribute of some Substantive, and an affirmation concerning that attribute. The definition of Dr. Beattie seems to be more objectionable. He defines a verb to be "a word necessary in every sentence, signifying the affirmation of some attribute, together with the designation of time, number, and person." According to this definition, neither infinitive moods, nor gerunds, nor supines, nor participles are verbs; for they neither contain an affirmation, nor signify time, nor are limited either to number or person. If affirmation, which we conceive to be the case, be essential to verbs, it is possible to form a tolerably copious language with only one verb in it; for infinitives, participles, adjectives, &c. may be fo united to nouns by the copula, or verb is, alone, as to express almost any idea which we can have occasion to communicate. But if the circumstances of time, person, and number, be essential to verbs, it is more than probable that languages may subsist in the world, which have not a single verb in them. And in this case Dr. Beattie cannot consistently maintain, as he affirms, that a verb is "a word necessary in every sentence." In the Malay language, e.g. which is held in high estimation, and which has wide extent in the East Indies, the verb admits of no modification whatever, on account either of person, tense, or voice; in all these respects, the personal pronouns only, with particles prefixed, determine the sense.

The verb is thus called of the Latin verbum, word, by way of eminence; as being the principal word of a sentence. Accordingly verbs, as Dr. Adam Smith observes, must have been coeval with the first attempts towards the formation of language. No affirmation can be expressed without the assistance of some verb. This writer argues, that the radical verb, or the first form of it, in most languages, would be what we now call the Imperfetive verb: as "it rains," and the like: as this is the simplest form of the verb, and merely affirms the existence of an event, or of a state of things. By degrees, after pronouns were invented, such verbs became personal, and were branched out into all the varieties of tenses and moods. On this subject, see Verb, Substantive, infra.

The common definition given by grammarians is, that the verb is a word which betokens being, doing, or suffering. This is the definition of the learned bishop Lowth, and it includes nothing more than what is essential; so that it is equally applicable to the verb in all languages, in all its various forms, comprehending not only infinitives and participles, but likewise gerunds and supines. If it is in any respect defective, it is because it does not in all cases sufficiently distinguish verbs from verbal nouns. Infinitives and participles, gerunds and supines (see each in its place), not only signify actions, but govern the cases of nouns and pronouns in the same manner with the verbs, and therefore should be comprehended under the name of verbs. But those verbal nouns which do not govern accussative cases have not the same pretensions; for they have not the regimen of verbs, but of Substantives, and consequently more properly belong to that class.

To conceive the origin and office of verbs, it may be observed, that the judgment we make of any thing, as when we say the earth is round, necessarily includes three terms. The first, called the subject, is the thing we affirm of, e.g. earth. The second, called the attribute, is the thing affirmed, e.g. round. The third, is, connects those two terms together, and expresses the action of the mind, affirming the attribute of the subject.

This last is what we properly call the verb; and which some of our later grammarians, particularly the Port Royalists, choose to call by a more significant word, affirmation. The reason is, that its principal use is to signify affirmation; that is, to shew the discourse in which that word is used, is the discourse of a man who does not only conceive things, but judges and affirms somewhat of them.
By this circumstance, a verb is distinguished from nouns, which also signify an affirmation, as *affirmans affirmatis*; those only signify affirmation, as that, by a reflection of the mind, is rendered an object of thought: so that they do not shew, that the person who utters *affirm*., but only that he conveys an affirmation.

Though the principal use of verbs be to signify affirmation or assertion, they also serve to express the other motions of the soul; as to desire, pray, command, &c.; but this they only do, by changing the mood, or inflexion.

Here, we only consider the verb in its primary significatio, which is that it has in the indicative mood. On this footing, the verb should have no other use, but to mark the connection which we make in the mind, between the two terms of a proposition; but the verb *affirms, to be*, is the only one that has retained this simplicity: nor, in strictness, has this retained it, but in the third person, as *am*, is.

In effect, men being naturally inclined to shorten their expressions, to the affirmation they have almost always added other significations in the same word: thus, *is* they add that of some attribute, so as that two words make a proposition; as in *Petrus vivit*. Peter lives: where *vivit* includes both the attribute and affirmation: it being the same thing to say *Petrus vivit*, as that *Peter is living*. And hence the great variety of verbs in every language.

For if people had been contented to give the verb its general significatio, without any additional attribute, each language would only have needed one verb, viz. the verb *volatile*, *is*. But on some occasions, they also superadd the subject of the proposition, as *sum homo*, I am a man; or *vivo*, I live: and hence the diversity of persons in verbs.

Again, we also add to the verb, a relation to the time, with regard to which we affirm; so that one single word, as *canditatus*, signifies that I attribute to the person I speak the action of being, not for the present time, but for the past: and hence the great diversity of tenses in most verbs.

The diversity of these significations, or additions in the same word, has perplexed and deceived many of our best authors, in the nature of a verb; and has led them to consider it, not according to what is essential to it, which is to affirm; but according to some of these its accidental relations.

Thus, Aristotle, taking up with the third of those additional significations, defines verb to be *vox significans cum tempore;* a word signifying something with time.

Others, as Buxtorf, adding the second relation, define it, *vox flexivis cum tempore et persona;* a word admitting of divers inflexions, in respect of time and person.

Others, taking up with the first of the additional significations, which is that of the attribute, and considering that the attributes men ordinarily add to the affirmation, were actions and passions, have supposed the essence of a verb to consist in signifying actions or passions.

Lately, Scaliger imagined he had made a great discovery in his book of the Principles of the Latin Tongue, in saying, that the distinction of things into *permanentes, and fluentes*, into what remain, and what passes away, is the proper source of the distinction between *nouns* and *verbs*; the first being to signify what remains, and the second what passes.

But from what we have said, it is easy to perceive, that these definitions are all false: and that the only true definition is *vox significans affirmationem;* this definition includes all that is essential to the verb: but if one would likewise include its principal accidents, one might define it, *vox significans affirmationem, cum designatione persona, et temporis;* a word which signifies an affirmation, with a designation of person, number, and tense; which is what properly agrees to the verb *volatile*.

For as to other verbs, considered as becoming different by the union of certain attributes, one may define them thus: *vox significans affirmationem aliqualvis attributum, cum designationo persona, numeri, et temporis;* a word which expresses the affirmation of some attribute, with a designication of person, number, and time.

Verbs, according to Mr. Harris, are those *attributives*, which have a complex power of denoting both an attribute and an affirmation: those which take the attribute alone without the affirmation are *participles*; and all other attributes are included under the general name of *adjectives*. And as some attributes have their influence in motion, e.g. to walk, to live, &c. others in the privation of motion, e.g. to die, &c. and others again in subjuncts, which have nothing to do with either motion or its privation, as *great* and *little*, *white* and *black*, &c. these last are *adjectives*, and those which denote motion or its privation are either verbs or participles. But motions and their privation, comprehended under the general term energy, imply time as their concomitant, and hence, he says, verbs which denote them, come to denote time also. See *Tense*. See also *Mood.*

Every energy has a reference, says this ingenious writer, to some energizing substratum, and is conversant about some subject; and hence he derives the distinction between verbs *active* and *passive*: and as every energy respects an energizer, or a passive subject; hence appears the reason why every verb, whether active or passive, has in language a reference to some noun for its nominative case. When among the infinite subjuncts, to which the energy refers, that happens to occur, which is the energizer also, as Brutus loved *himself*, *flowed himself*, &c. in such case the energy hath to the same being a double relation, both active and passive; and this gave rise among the Greeks to that species of verbs, called *verbs middle*; but in other languages, the verb still retains its active form, and the passive subjunct (*je* or *himself*) is expressed like other accussatives. Again, in some verbs, it happens that the energy always keeps within the energizer, and never passes out to any foreign subject, because the energizer and the passive subject are united in the same person; and then we obtain that species of verbs, called by grammarians *verbs neuter*, as if they were void both of action and passion, though they may rather be said to imply both. Of the above species of verbs, the middle cannot be called necessary, because most languages have been without it: those remaining are, therefore, the *active*, the *passive*, and the *neuter*, which seem essential to all languages whatever. Mr. Harris observes, that though the greater part of verbs denotes attributes of energy and motion; there are some which appear to denote nothing more than a mere simple adjective, joined to an affirmation, as *isr.a* in Greek, *equatein* in English, *alco* and *tumo* in Latin; and there are also verbs, which are formed out of nouns, or in which the subjunctive is converted into an attributive. There are other supposed affections of verbs, besides moods and tenses, such as number and person. But these are, in fact, the properties not of attributes, but of substantives. Hermes, chap. vi. viii. and ix.

Verbs are variously divided: with respect to the subject or signification, they are divided into *active*, *passive*, *neuter*, &c.; with respect to their conjunction, into *transitive* and *intransitive*; with respect to their formation or inflexions, into regular and irregular, personal and imperatival, auxiliary, *infinitive*, &c. See *Language*, *Grammar*, and the subsequent articles.
VERB Active, is a verb which expresses an action that falls on another subject, or object. It is called also transitive, because the action paffeth over to the object, or hath an effect upon some other thing. See Active.

VERB Passive, is that which expresses a passion; or which receives the action of some agent, and necessarily implies an object acted upon, and an agent by which it is acted upon: it is conjugated, in the modern tongues, with the auxiliary verb I am, je suis, je fono, &c.

Some do not allow of any verbs passive in the modern language; the reason is, what we call passive is nothing but the participle of the verb, joined with the auxiliary verb, to be; whereas the verbs passive of the Latin, &c. have their particular terminations. See Passive.

VERB Neuter, is that which signifies an action that has no particular object on which to fall; but which, of itself, takes up the whole idea of the action: or a verb neuter expresses being, or a state or condition of being; when the agent and the object acted upon coincide: as, I sleep, thou vàwlaft, he knows, we walk, you run, they stand.

The Latin's call them neuters, because they are neither active nor passive; though they have the force and signification of both: as, I languish, signifies as much as, I am languishing: I obey, as much as I exercise obedience, &c. only that they have no regimen to particularize this signification. The verb neuter is called intransitive; because the effect is confined within the agent, and doth not pass over to any object.

The distinction between verbs absolutely neuter, as, to sleep, and verbs active intransitive, as, to walk, though founded in nature and truth, is of little use in grammar, the construction of both is the same. Lowth's Gram. p. 62.

Of these verbs, there are some which form their tenses by the auxiliary verb to have; as, I have slept, you have run. These, grammarians call neuter active.

Others there are, which form their component parts by the auxiliary to be; as, I have come, to arrive, &c.; for we say, I am come, not I have come, &c. These are called neuter passive.

The neuter verb is varied like the active; but, having somewhat of the nature of the passive, admits in many instances of the passive form, retaining still the neuter signification; chiefly in such verbs as signify some sort of motion, or change of place or condition; as, I am come, I was gone, &c.

In English, many verbs are used both in an active and neuter signification, the construction only determining of which kind they are.

VERB Substantives, is that which expresses the being, or substanee, which the mind forms to itself, or appoises in the object; whether it be there, or not: as, I am, thou art.

Existence, says Mr. Harris, may be considered as an universal genus, to which all things of all kinds are at all times to be referred. The verbs, therefore, which denote it, claim precedence of all others, as being essential to the very being of every proposition in which they may still be found, either explicit, or by implication: express, as when we say, the sun is bright; by implication, as when we say, the sun shines, which means, when resolved, the sun is rising. The verbs is, grows, becometh, es, fit, veb, xovn, 

Verbs of experience, a name more apt, as being of greater latitude, and comprehending equally as well attribute as substanee. The principal of these verbs is the verb is, es, x. All existence is either absolute, as when we say, B is; or qualified, as when we say, B is a animal, B is black, &c. And with respect to this difference, the verb, is, can by itself express absolute existence, but never the qualified, without subjoining the particular form; consequently, when is only serves to subjoin some form, it has little more force than that of a mere affirmation. Under the same character, it becomes a latent part in every other verb, by expressing that allertion, which is one of its essentials: e.g. rifles means is rising, &c.

Moreover, as to existence in general, it is either mutable, as in the objects of fation; or immutable, as in the objects of intellection and science. All mutable objects exist in time, and admit the several distinctions of present, past, and future; but immutable objects have no such distinction, but rather stand opposed to all things temporary. And hence result two different significations of the subjunctive verb is, as it denotes mutable or immutable being: e.g. if we say, this orange is ripe, is means that it existeth now at this present, in opposition to past time, when it was green, and to future time, when it will be rotten; but if we say, the diameter of the square is incomparably large with its side, we do not intend by is that it is incomparable now, having been formerly commensurable, or being to become so hereafter: on the contrary, we intend that perfection of existence, to which time and its distinctions are utterly unknown. Under the same meaning, we employ this verb, when we say, truth is, or God is: the opposition is not of time present to other times, but of necessary existence to all temporal existence whatever. Hermes, p. 88, &c.

In every language, says Dr. Adam Smith, in his "Formation of Languages," annexed to his "Theory of Moral Sentiments," there is a verb, known by the name of the subjunctive verb, in Latin, sum, in English, I am. This verb, he says, denotes not the existence of any particular event, but existence in general. On this account it is the most abstract and metaphorical of all verbs, and consequently could by no means be a word of early invention. Nevertheless he allows, that it is in every language; and therefore in languages which are in their earliest infancy. Others are of opinion, not without reason, that the verb subjunctive, or copula, is, is not only the most necessary, but the most simple of all verbs, for it contains nothing more than an allertion, or affirmation, that a thing exists. The idea conveyed by this simple proposition is coeval with thought itself: for what can we think about, unless we think that something is, or is not? This copula, or verb of existence, is, must appear to be coeval with language itself. But we cannot reasonably infer from hence, that this was the case with respect to any other finite verb. It is probable, that people, in their first attempts to express their ideas by words, would be some time before they invented any other word containing in itself an allertion or affirmation: for they would not, at a very early period, think of contriving words so complex in their nature as to include in them both the name of an action and an allertion.

An ingenious writer on the subject of verbs (see Pick- bourn's Differtation on the English Verb) conjectures that the first mode of expressing actions or passions would be by participles or verbal nouns; i.e. words signifying the names of the actions or passions they wanted to describe, and these words, connected with their subjunct by the copula is (a word coeval with speech itself), might, in these rude beginnings of language, tolerably well supply the place of verbs; e.g. from observing the operations of nature, such words as rain or raining, thunder or thundering, would soon be invented; and, by adding the copula is, they would say, raining, thundering, or thunder, is, or is not; rainings, or rain, is; which, by the rapidity of pronunciation, might in time
time form the verbs rains, thunders, &c. The observation of their own actions, or the actions of the animals around them, would soon increase their flock of ideas, and put them upon contriving suitable expressions for them. Hence might arise such words as these: sleep, or sleeping; stand, or standing; run, or running; bite, or biting; hurt, or hurting; and by joining these to substantives, by means of the copula, they might form such fentences as these, Lion is sleeping, or perhaps Lion sleeps, stand, &c.; which would soon be contracted into Lion sleeps, stands, runs, bites, hurts, &c.

Thus our little inflected family might become possessed of verbs including an attribute and an affirmation in one word. The next step would probably be a distinction between actions in their progress and in their finished state; i.e. actions going on in their presence, and perceived by their senses; and such as were ended, and consequently only known to them by memory, by report, or by their effects: and they might perhaps apply such words as raining, thundering, sleeping, &c. to the former kind of actions; and such as rained, thundered, slept, &c. to the latter. And by joining the copula is to these words signifying perfect actions, in the same manner in which they had joined it before to the words signifying imperfect ones, and afterwards contracting them into single words, they might soon acquire a verb expressing a finished action and an affirmation in one word. This improvement would probably suggest to them the idea of making such further alterations in, or additions to, their verbs, as would make them significant of all the grand divisions of time.

But still their verbs would have neither person nor number, and would probably remain in that state till the invention of pronouns. But this, requiring some degree of abstraction, would probably not happen very early; for, in their first efforts to express themselves, they would be more likely to say, "Thomas loves William and Henry," than "I love thee and him." However, in process of time, pronouns would no doubt be introduced: and they might perhaps make such alterations in their verbs, as to accommodate them to their numbers and persons, though such an accommodation does not seem absolutely necessary. Languages may therefore exist which do not vary their verbs to express either number or person. And, further, it is possible that there may be languages so constructed as not to admit any variation in their verbs, even to express time; for if the verb only contains, in itself, an assertion or an attribute, the time of it may be fixed by adverbs and other adjuncts. This author concludes that a definition applicable to the verb in all languages, and in all its forms, cannot comprehend in it any thing more than what bishop Lowth has expressed by saying, "A verb is a word signifying to be, to do, or to suffer."

The copula, or substantive verb, is, according to this author, is, as we have already stated, the simplest of all verbs; and must necessarily have been contemporary with the first efforts of mankind to express their ideas by words. Without this we cannot unite an adjective to a substantive, or affirm that any thing is good or bad, or possesses any quality whatever, or even exists. But this is the only verb, containing an affirmation, which is so perfectly simple in its nature as not to comprehend, at least, two ideas, which may be easily separated, nay which must necessarily be separated, in the operations of the mind, whenever it endeavours to express them. Plus, it rains, or it is raining, comprehends the idea which the mind forms of that operation of nature which we call rain or raining, and likewise an affirmation of the judgment which the mind forms concerning its present existence; and therefore cannot be expressed more briefly and naturally than by is raining, or rain is, which is easily contracted into, rains.

**VERB.**

**VERBS, Auxiliary, or Helping, are those which serve in conjugating active and passive verbs; such are, I am, I have &c.**

The auxiliary verbs are like prepositions, words of a very general and abstract nature. They imply the different modifications of simple existence, considered alone, and without reference to any particular thing. In the early state of speech, the import of them would be incorporated with every particular verb in its tenses and moods, long before words were invented for denoting such abstract conceptions of existence, alone and by themselves. But after these auxiliary verbs, in the progress of language, came to be invented and known, and to have tenses and moods annexed to them, like other verbs; it was found, that as they carried in their nature the force of that affirmation which distinguishes the verb, they might, by being joined with the participle which gives the meaning of the verb, supply the place of most of the moods and tenses.

The abbot de Dangeau distinguishes all verbs into two general kinds; auxiliary verbs, and verbs which make use of auxiliaries.

This distinction may tax as not very just: in regard auxiliary verbs sometimes make use of auxiliaries themselves: but this does not destroy the division; it only shews, that the auxiliary verb has two formalities, or two different qualities, under which it is to be considered; in virtue whereof, it constitutes, as it were, two sorts of verbs.

The verbs which make use of auxiliaries, he divides into active, neuter, and pronominal. Verbs neuter, he farther distinguishes into neuters active and neuters passive. Pronominals he distinguishes into identical, reciprocal, neuterized, and passified. But several of these are peculiar to the French language. See Auxiliary Verbs.

When an auxiliary is joined to the verb, the auxiliary goes through all the variations of person and number; and the verb itself continues invariably the same. When there are two or more auxiliaries joined to the verb, the first of them only is varied according to person and number. The auxiliary may admits of no variation.

**VERBS, Regular, are those which are conjugated after some one manner, rule, or analogy.**

**VERBS, Irregular, or Anomalous, are those which have something singular in the terminations or formations of their tenses.** See anomalous verbs.

The formation of verbs in English, both regular and irregular, is derived from the Saxon. The irregular verbs in English are all monosyllables, unless compounded; and they are for the most part the same words which are irregular verbs in the Saxon. The first class of irregulars comprehends those that are become so from some kind of contraction; thus, some verbs ending in d or t have the present, the past time, and the participle perfect and passive, all alike without any variation; as, beat, burst, cast, &c. which are contractions from beat, bursted,asted, &c. because of the disagreeable sound of the syllable ed after d or t. Others in the past time and particeip perfect and passive, vary a little from the present, by shortening the diphthong, or changing the d into t; as, lead, led; meet, met; bend, bent, &c. Others not ending in d or t are formed by contraction; as, have, had, for havved; fix, fled, for fleved, &c.

The following, beside the contraction, change also the vowel: felt, fold; tell, told; clothes, clad. The second class of irregulars are those that end in ght, both in the past time and participle, and change the vowel or diphthong into an or au: they are taken from the Saxon, in which the termination is bte: as, bring, bought; buy, bought; seek,
feet, fought, &c. The third class of irregulars form the past time by changing the vowel or diphthong of the present; and the participle perfect and passive, by adding the termination en to these also derive their formation from the Saxon: such are, fall, fell, fallen; flake, flaked; draw, drew, drawn; flag, flew, flung, &c. &c. When on follows a vowel or liquid, the e is dropped. Some verbs, which change i short into a or u, and long into o, have dropped the termination en in the participle; as, begin, began, begun; sing, sang, sung; &c. To this third class belong the defective verbs, be, been; go, gone; i.e. gone.

The whole number of verbs in the English language, regular and irregular, simple and compounded, taken together, is about four thousand three hundred. See in Dr. Ward's Essays on the English Language the catalogue of English verbs. The whole number of irregular verbs, including the defective, is about one hundred and seventy-seven. Lowth's Gram. p. 85. See conjugation.

Verbs, Defective, are those which are not only for the most part irregular, but are also wanting in some of their parts. Such are the auxiliary verbs, most of which are of this number. They are in use only in some of their tenses and moods; and some of them are a composition of tenses of several defective verbs having the same signification.

Verbs Inchoative. See inchoative.

Verbs Imperfective. See imperfective.

There are also reduplicative verbs; as, resound, recall, &c.; and frequentative verbs, &c.

Verbs Transitive; and Verb Active, supra.

For the observations of an ingenious and learned coadjutor on the origin, nature, distribution, and properties of verbs, we must content ourselves with referring to the article Grammar. It will be found that his sentiments differ in a variety of respects from those of much approved and popular writers, above stated; and we therefore prefer submitting them in the language of the author to the judgment of the philological reader, without any abridgment, and without any recapitulation, which would encroach too much on the limits to which we are confined. On this subject, see language.

Verbal, something that belongs to verbs, or even to words spoken with the mouth. Verbal nouns, are those formed from verbs. See in- finitive.

A verbal contradist, is that made merely by word of mouth, in opposition to that made in writing.

Verbal Accident. See accident.

Verbano, in Geography, a department of Italy, constituted of part of the duchy of Milan, situated on the side of lake Major, anciently called Verbanus Lacus, and the bailiwicks ceded by the Swits. It contains 166,842 inhabitants, who elect twelve deputies. Varefo is the capital.

Verbanus, in Ancient Geography, a lake of Gallia Transpadana: its northern part was in Rhedita, and its southern part in Gaul.

Verbas, in Geography, a river of Bosnia, which runs into the Save; 25 miles N.N.E. of Banjaluka.

Verbasculum, in Botany, the diminutive of Verbas, perhaps from some similarity of colour and aspect, which may be traced in the Primrose and Cowslip. Bauh. Pin. 241. This is precisely synonymous with Primula; see that article.


Gen. Ch. Cal. Perianth inferior, of one leaf, small, permanent, in five deep, erect, acute, nearly equal, segments. Cor. of one petal, wheel-shaped, unequal; tube very short; limb spreading, in five deep rounded segments. Stam. Filaments five, awl-shaped, unequal, dilatant, declining, woolly, shorter than the corolla, inserted into its base; anthers compressed, erect, more or less kidney-shaped, burrting lengthwise, imperfectly two-celled. Pist. Germen superior, roundish; style thread-shaped, slightly swelling upwards, declining, rather longer than the stamens; stigma obtuse. Peric. Capsule roundish-ovate, or ovate-oblong, slightly compressed, of two cells and two valves, burring in the upper part, the valves sometimes splitting half way down; partition double, from the inflamed parallel margins of the valves, but often incomplete. Recept. ovate or globular, central, connected at each side, in an early state at leaf, with the valves. Seeds numerous, minute, angular, dotted, inserted into the receptacle.


Ob. There is so great a space between the inner edges of the inflamed valves and the central receptacle, in V. pulmonatum and some other species, that the ripe capsule is literally of but one common cell, though originally of two. Hence arose an error in Engli. Bot. p. 58, 59, which is corrected at p. 457 of the same work. Celia (see that article) differs from this genus in having four stamens only, two long and two short. Professer Schrader, in the first part of an excellent monograph on Verbascum, published at Göttingen in 1813, p. 14, affirms that this difference is very confant and invariable, and therefore he is not disposed to concur with those botanists who combine these two genera. We heartily assent to this determination. With regard to the new genus of Ramonda, founded, if we mistake not, on V. Myconi, and distinguished by having a capsule of one cell, with two lateral linear receptacles; we must suspend our judgment till we can examine into that character, but the habit of the plant, and its oblong heart-shaped two-celled anthers, indicate a very distinct genus.

The species of Verbascum are among the most uncertain of any well-known genus. They are more than commonly variable in the colour and size of their flowers, and appear to be very subject to croes impregnation. Hence we are led to mistrust some reputed species, descried even by the ablest writers. The production of several mule ones has been traced and recorded, and we have observed others. Professer Schrader indeed has long cultivated and studied what he has described, and his accuracy is indisputable. We shall give his new species, on his own authority, and we shall profit by his remarks in the general characters here prefixed to the particular descriptions.

The root is generally biennial, rarely perennial, its form tapering. Stem generally solitary, from a foot and a half to four or eight feet in height, erect, sometimes peculiarly stiff and straight, rarely a little zigzag, leafy, in several

flances


VERBASCUM.

flaxes alternately branched, many-flowered, panicked, with racemose flaks; in V. Myconi only altogether wanting. Leaves all radical the first year, subequally all cauline: flaked, felfile, or decurrent; always alternate, limpe, ob- long; undivided, lobed or pinnaflid; limply or doubly cre- nate or toothed, rarely entire; generally covered with denfe, white, flaggfry or flary, or mealy and deciduous, woyllines; fometimes nearly smooth. Flowers racemose, generally aggregate, crowded, and very numerous; mottly yellow, rarely yellow-whifh-white, or purple, or brownish. Bractes moffly ovate, or lanceolate, pointed, of two orders, external and internal. The whole genus is nearly, if not entirely, European, the species found in America, except perhaps V. Clayfoni of Purfli and Michaux, having been apparently introduced from this quarter of the world. The Levant produces many fine ones, not well known to Linneus.

Sect. 1. Leaves decurent.

1. V. Thafpus. Great Mullein; or High Taper. Linn. Sp. Pl. 252. Wild. n. 1. Schrad. n. 1. Purfli n. 1. Pf. Brit. n. 1. Engl. Bot. t. 549. Pf. Dan. t. 631. (Tapus barbatus; Ger. Ein. 773. Chalcois danum affum; Diofl. book 4. chap. 104.)—Leaves decurrent, crenate, woolly on both sides. Stem fimple. Cluster denfe. Flowers almofl felfile.—Frequent throughout Europe, on banks and wale ground, flowering in July and August; very common in Greece. Mr. Purfli observes that, though common in America, this plant was probably introduced from Europe; nevertheless it springs up abundantly in the moft remote parts of the country, in fields newly cleared and burnt. The root is biennial. Stem from three to five feet high, crefet like a flaff, woolly, winged with decurrent acute leaves, which are cloathed with white entangled hairy woo, like cloth or futm. Flowers very numerous, large, of a bright golden-yellow, with orange-coloured hairy fllamens, and roundifh red anthers. Mr. Robfon of Darlington communicated to Dr. Withering a mule plant, produced under his own eyes, from this fpecies impregnated by V. nigrum. Mr. D. Turner found a correpofponding fpecimen, now before us, at Barton, near Swaff ha, Norfolk. The leaves are but flightly decurrent. Spike elongated and fider.—The leaves of V. Thafpus, about a handful boiled in a pint of milk, fweetened with fugar, frained, and the milk taken at bed-time, are useful in coughs, and more efpecially fervice- able in allaying the irritation of the piles. V. pulvulatum has the fame qualities. V. thapsiformes, Schrad. n. 2. fcems fcarcey more than a variety with a largcer corolla, and two of the anthers oblong, instead of their being all round.

2. V. crofififolium. Thick-leaved Mullein. Schrad. n. 3. "Hoffmannfeg and Link Luft. v. 1. 213. t. 26."—Leaves decurrent, obscurly crenate, denfly woolly; the upper ones rather acute. Chiffer denfe. Flowers almofl felfile. Filaments smooth. Two of the anthers oblong.—Found in sandy ground in Portugal. The smooth filaments afford the chief diftinction between this plant and the last, at leaft its variety called thapsiformes. Experience must fhow, by cultivation, whether this be permanent.

3. V. cuspidatum. Pointed-leaved Mullein. Schrad. n. 4. t. 1. f. 1. (V. Thafpus; Ehrl. Pl. Off. n. 111.)—Leaves decurrent, crenate, woolly on both fides; the upper ones pointed. Cluster somewhat interrupted. Two of the an- others oblong.—Found in mountainous woods near Vienna. Schott. Near Uplal. Ehrlhart. This Dr. Schradr mentions as the V. Thafpus of the Vienna botanifts, agreeing in habit with the two foregoing, but the ifem is of more humble nature, and more flender. Leaves smaller, lefs denfly woolly; the upper ones taper-pointed. Inflofence and flowers more like V. phlonofoles, the cluffers being interrupted, the flowers more flaked, and aggregate in little tufts. Corolla large. Two longer fllamens having oblong anthers; and in our ifpecimen from Ehrhart smooth filaments, though the rest are hairy.

4. V. niveum. Snow-white Mullein. Tenore Hort. Neap. 109. Schrad. n. 5.—Leaves half-decurrent, crenate; woolly and very white beneath; more fjtightly fo above. Chiffer denfe. Flowers nearly felfile. Anthers uniform. —Found near Naples. Stem two or three feet high, round; at length smooth and brownish. Leaves thickfif, foft; their upper surface becoming green and flightly downy, though the under is snow-white. Flowers yellow, in tufts, almofl felfile, about the fize of V. Thafpus. Filaments clothed with white wool. Schradr. This appears to be really a very diftinct species.

5. V. denfiflorum. Denfe-flowered Mullein. "Bertol. Pl. Rav. Ital. v. 3. 52." Schrad. n. 4.—Leaves downy; the radical ones lanceolate, elongated, crenate, deeply fer- rated at the fabe; upper item-leaves pointed, toothed, half- decurrent. Cluster denfe. Flowers aggregate, nearly felfile.—Found on the fummit of mount Bruciana, between Carrara and Maffa. Stem four or five feet high, an- gular, clothed with tawny woyllines, especially the upper part. Radical leaves more than eighteen inches long, two or three broad in the middle; green above; fott hairy be- neath; thofe of the item gradually shorter upward, ovale, pointed, felfile, with a small decurrent wing on each fide, more downy all over, especially the uppermoft. Chiffer very denfe, above a foot long. Flowers large, yellow, in tufts on extremely short flarks. Pubefcence of the whole plant yellow or tawny, compered of branched entangled hairs, and much the moft denfe in the upper part. Bertoloni.

6. V. thapsoides. Long-speared Mullein. Schrad. n. 7. t. 5. f. 2. "Hoffmannfeg et Link Luft. v. 1. 214, excluding the fynonymes."—Leaves filden crenate, downy; radical ones oblong-lanceolate; the refl oblong, acute, half-decurrent. Flowers on short flarks, aggregate, rather crowded. Anthers nearly equal.— Native of Portugal. Perennial. Stem three or four feet high, or more, generally branching at the top into several long, rather fnder, tolerably denfe cluffers of yellow flowers, smaller than V. Thafpus. Schradr. We conceive this to be no other than the Linnean V. Thafpus; see V. Lychnitis.

7. V. maccranthus. Great-flowered Mullein. Schrad. n. 8. "Hoffmannfeg et Link Luft. v. 1. 215. t. 27."—Leaves filden crenate, downy; radical ones elliptic-oblong, tapering at the base; the refl oblong, acute, half-decurrent. Cluster interrupted, with diffant tufts of flowers. Two of the anthers oblong.—Found by fide fides, in the northern part of Portugal. Root fupposed to be biennial. Stem two or three feet high, crefet, fimple, at length smooth and of a purplifh-brown. Leaves thick, reticulated with veins beneath; their upper fide becoming green and almofl naked by age; radical ones flaked, three or four inches long, and half as broad. Flowers large, handifome, yel- low. Hair of the fllamens orange-coloured. Caffule feall. Schradr.


Leaves ovate, filden crenate, downy on both fides; lower ones flaked; upper pointed, cloathing the item, flightly decurrent. Cluster interrupted.—Native of barren waste ground
VERBASCUM.

9. V. condensatum. Denf-flowered Round-leaved Mullein. Schrad. n. 11. t. 5. 3.—"Leaves downy; radical ones elliptic, oblong, tapering at the bafe, doubly and unequally crenate; tho' of the stem oblong, acute, finely crenate; uppermoft roundish-ovate, pointed, slighdy decurrent. Clusters denfe. Two of the anthers oblong."—Observed by Mr. Schott in Austria, on a barren soil. Biennial. We cannot but fupect this to be a variety of the lef, with a more denfe inflorefcence; larger, more ftrongly crenate, radical leaves, and broader upper ones. The two species are, at leaft, very nearly akin.

10. V. nemorosum. Grove Mullein. Schrad. n. 12. t. 1. f. 2.—"Leaves acute, crenate, downy; radical ones oblong, tapering at each end; lower stem-leaves lanceolate, contracted at the bafe; middle ones oblong-lanceolate; upper oblong, slighdy decurrent. All the tufts of flowers a little remote. Two anthers oblong."—Found by Mr. Schott in groves in Austria. Biennial. Akin to V. phlomoides, but diftinguished by its ftraight, wand-like stem, four feet high, with a foltary lax cluster, and the narrow elliptic-lanceolate shape of all its leaves, which are of a yellow-green, the radical ones becoming finallly rather naked on the upper surface.

11. V. montanum. Mountain Mullein. Schrad. n. 13. "Hort. Gotting. fasc. 2. 18. t. 12."—"Leaves downy; radical ones oblong-elliptical, crenate, falked; tho' of the stem oblong, rather acute, slighdy crenate; uppermoft acute, rather decurrent. Flowers nearly fefile, in rather crowded tufts. Anthers almoft equal."—Native of the Pyrenees, as well as of the alps of Switzerland and Germany. Biennial. Stem eighteen inches or two feet high, cref, fimple, clothed, like the reft of the herbage, with yellowfifty puberfence. Leaves somewhat wrinkled, reticulated beneath; the radical ones three to four and a half inches long, two to two and a half broad, obtufe, loing part of their thick downines by age; lower stem-leaves tapering into a footstalk; the reft acute, fefile, or, about the top of the stem, slighdy decurent. Clusters from about three to fix inches long. Flowers nearly fefile, in tufts more or less crowded; some foltary. Bracteas ovato-lanceolate, pointed, scarcely exceeding the flowers, except the lowermoft. Calyx as in V. phlomoides. Corolla molt like V. Thapius. Two of the filaments more slighdy hairier than the reft, sometimes naked; their anthers perfect, but rather larger and more oval than the three others. If cultivated in shady situations, the stem sometimes reaches the height of fix feet, and becomes branched in the flowering part; the leaves also grow much larger, of a dirty green, a little polifhed on the upper side; the clusters above a foot long, thicker, and more compact. Schrader.

12. V. callithum. Hill Mullein. Schrad. n. 14. t. 5. f. 1.—"Leaves crenate, downy; lower ones elliptic-oblong, falked; tho' about the middle of the stem oblong-lanceolate, rather acute, tapering at the bafe; uppermoft oblong, acute, slighdy decurrent. Tufts of flowers foltary. Anthers equal."—Native of hillocks, and dry graffy ground, in fome parts of the north of Germany. Perennial. Stem two or three feet high, cref, fimple, flightly angular in the upper part; rediff below. Leaves fott, wrinkled, downy on both fides; pale green above; hoary and reticulated beneath; radical ones four or four and a half inches long, and half as broad; the reft gradually smaller upwards, the top ones being about an inch and a half in length. Clusters twelve or eighteen inches long, rarely having a branch at the bafe. Flowers yellow, fweet-fcented, refembling V. nigrum, with purple-beraided filaments, and compofing numerous little tufts, often near an inch from each other. Schrader. We should fuppofe this might be a mule progeny of V. nigrum, impregnated by fome of the foregoing fpecies; having found near Norwich what has every appearance of being a familar offfpring of nigrum, from the pollen of V. palmarum.

13. V. veriflorm. Various-flowered Mullein. Schrad. n. 15.—"Leaves crenate, downy; lowermoft elliptic-oblong, falked; tho' of the stem oblong, acute, flightly decurrent; uppermoft pointed. Clusters paniied. Tufts foltary, of few flowers. Anthers equal."—Found in fandy ground near Prag, but barely. The herbage is clothed with denfe down, of a dirty yellow-fifty green hue. Stem two or three feet, or more, in height, branched in the flowering part, rarely fimple. Leaves rather thick and ruffled; radical ones from three and a half to fix inches long, one and a half to two and a half broad, moft evidently and acutely crenate at the bafe; tho' about the middle of the stem only fefile. Clusters paniied, a foot long, or more. Flowers generally the size of V. phlomoides, flightly fragrant, in rather diftant tufts. Partial stalks half as long again as the calyx. Bracteas ovato-lanceolate, with long points; the inner ones linear, much smaller. Corolla of a rufty red, but variable, the bafe of its smaller segments bearded with the fame kind of yellow wool that clothes the three fmalier filaments. Two larger ffilaments covered entirely with purple wool, fome of which alfo is feen about the middle of the three others. Anthers kidney-shaped; tho' of the two longer filaments rather larger, and finally more oval. Pollen whitif. Sometimes the corolla is found twice its usual fize, and the partial flower-stalks are occasionally more long and flender than above defcribed. Professor Schrader received this from Mr. Tauch, a Bohemian botaniff, as V. rubiginosum of Waldftein and Kitaiifei; a fpecies unknown to us, but which he fays is widely different.

14. V. ramigerum. Branched Decurrent Mullein. Schrad. n. 16. t. 4.—"Leaves finallly downy; radical ones oblong-lanceolate; tho' of the stem oblong, acute, doubly crenate,
nate, half-recurrent; uppermost pointed. Clusters panied. Tufts Dalton, many-flowered. Anthers equal."—Native of the duchy of Mecklenburg-Swinem. Link. The habit of this species refembles f. Lychnitis. Root biennial. Stem from four to six feet high, erect, thick; rather angular, brown, and much branched in the upper part; the branches spreading, angular, and, like the rest of the stem, slightly downy. Upper side of the leaves covered with very thin pubescence; under more hoary, and more thickly clothed; the radical, and lower stem-leaves, often a foot or more in length, four or five inches wide, tapering down into the footstalk. Flowers yellow, from fifteen to twenty in each tuft of the principal cluster, on stalks twice the length of the calyx; fewer in the lateral clusters; the lower tufts many of them very distant from each other. Bracteas ovato-lanceolate. Calyx and corolla larger than in f. Lychnitis. Stamens like those of that species. Schrader.

15. V. mucronatum. Pointed-leaved Mullein. Lamarck Dict. v. 4. 218. Schrad. n. 17; excluding perhaps Tournouf's synonym. — "Leaves esurate, clothed with dense hoary down; radical ones oblong-lanceolate; those of the stem, green, acute, half-recurrent; uppermost ovate, long-pointed. Spikes panied. Flowers in nearly sessile heads." Found in Crete by M. Labillardiere. Root biennial. Whole herbage covered with hoary down. Stem, in the cultivated plant at least, from six to eight feet high, straight, thick, branched upwards. Lower leaves one and a half, or two feet long, on short stalks, acute; the rest more pointed, and unequally decurrent. Spikes panied, various in length, their points somewhat incurved. Flowers yellow, rather large, in danty, many-flowered, feffile heads, hoary with deciduous woolinefs. Bracteas lanceolate. Filaments all clothed with whitish wool. Schrader.

16. V. finatum. Scallop-leaved Mullein. Linn. Sp. Pl. 254. Wildn. n. 12. Ait. n. 14. Schrad. n. 18. Sm. Fl. Grac. Sibth. t. 227, unpubl. (V. criphum et finatum; Bauh. Hift. v. 3. 860. V. alud; Camer. Epit. 882. Matth. Valgr. v. 2. 492. V. laciniatum Matthii; Dalech. Hift. 1302. qroes meta; Diof. book 4. chap. 104.)—Leaves serrated, powdery; radical ones pinnatifid and wavy; the rest unaned, decurrent. Stem panied, many-flowered. Native of dry barren exposed situations, in the south of Europe, and north of Africa; a hardy biennial, long known in our botanical gardens, but seldom long preserved. Dr. Sibthorpe observed this to be the most common Mullein throughout Greece and all the circumjacent islands. The root is brown, and rather woody. Herb of a dark green, beksprinkled with loose tufts of powdery, hoary, flarrv pubefcence, but far less woolly, or uniformly hoary, than any of the preceding species. The leaves also differ widely from all the foregoing, in being pinnatifid half way to the midrib, with jagged and plaited lobes; the radical ones a span long, on shortifh stalks; the rest smaller, feffile, decurrent; the upper ones very small, ovato-lanceolate, undivided, more decurrent, reflexed; all of them reticulated with veins, rugofe; most hoary beneath. The stem is erect, one or a half or two feet high, zigzag, alternately branched from top to bottom, panied, often tinged with dark purple. Panice spreading, with copious, hoary, somewhat winged branches. Flowers generally tufted, flaked, yellow, with purple hairy filaments. Capsule small, roundift. The figure of Matthiols, copied by Dalechamp and Tabernamontanus, is more like the cultivated variety of the following species, but differs in its branching panied stem.

Seft. 2. Leaves not decurrent.

17. V. platicum. Plaited-leaved Mullein. Prodr. Fl. Grac. n. 524. Fl. Grac. t. 226, unpubl. (V. finatum f.; Linn. Sp. Pl. 255. V. pinnatifidum; Ait. n. 15, but not of Vahl nor Willdenow. V. gracum fruticosum, folio finato candidissimo; Tourn. Cor. 8. Voyage, v. 1. 128, with a figure. Placenta fens feada; Diof. book 4. chap. 104.)—Leaves pinnatifid, crisped, somewhat crenate, downy on both sides. Spikes simple, imparted, leafy.—Native of the isle of Hydra, and very plentiful about Athens. Root tapering, possibly perennial. Stem ascending, simple, leafy, clothed, like the foliage and calyx, with dense, flary, rigid, yellowih woolinefs. Leaves obovato-oblong, thick; plaited or crisped at the margin; their upper surface even, and almost without sign of veins; under reticulated; radical ones flaked, near a span long; the reft feffile, clasping the stem, and gradually smaller upward; floral ones very small and pointed. Spike solitary, erect, a foot long, leafy or fractuated. Flowers three or four feffile together in the bobom of each bractes, yellow, almost an inch broad. Filaments yellow, bearded from the middle to the summit. Anters all nearly alike. Capsule ovate, acute, hard, smooth when ripe. The leaves vary in acuteness; and in the garden plant, raised from Dr. Sibthorpe's seeds, become more dilated, flattened, and leaf crisped, refembing the figure of Matthiols, cited under our preceding species, but the pubefcence still remains totally different.

18. V. auriculatum. Auricled Mullein. Prodr. Fl. Grac. n. 523. Fl. Grac. t. 225, unpubl. (V. orientale maximum candidifimum, ratis candelabrum amnulatibus; Tourn. Cor. 8.)—Leaves elliptic-oblong, downy on both sides, auried at the base. Clusters panied, zigzag.—Native of the island of Samos. Biennial. The whole herb is clothed with dense snow-white down. Stem two feet high, fount, leafy; branched and becoming smooth in the upper part. Leaves crowded, feffile, two or three inches long, bluntly pointed, accompanied by axillary tufts of smaller ones; their upper surface covered with a dense and even coat of wool, hardly marked by rib or veins; the under reticulated, scarcely less densely clothed with a fluffy cobweb-like pubefcence; their base contracted, but augmented with a rounded lobe at each side, embracing the stem. Flowers yellow, flaked, tufted and bracteated, as in V. plomoids, but only half as large. Calyx with smooth points. Beard of the filaments yellowish-white. Anters orange-coloured, nearly uniform. We think Tournouf's synonym is here rightly applied, though cited by Lamarck and Schrader for mucronatum, n. 15, which must be a different plant from the present, unless it be inaccurately described.

19. V. pinnatifidum. Pinnatifid Mullein. Vahl Synb. v. 2. 39. Wildn. n. 13, excluding the synonym of Tournef, which belongs to our n. 17.—Leaves flat, pinnatifid, cut, powdery; nearly naked on the upper side; radical ones flaked. Stem panied, many-flowered.—Gathered by Dr. Sibthorp, on the sandy sea-shore near Yalla, in Bithynia. Root perennial, blackish, divided at the summit. Stem one to two feet high, erect, very much branched in all directions, leafy, round, dark-purple, sprinkled with downy meafines. Radical leaves three inches long, on long stalks, flat, deeply pinnatifid, cut, wrinkled and veiny; dark green and almost naked above; paler, and powdery with flary hairs, beneath; the younger ones very densely woolly; those of the stem not half so large, feffile, not decurrent, leaves divided; floral ones aggregate, spreading, extending for the most part beyond the flowers, which are feffile, crowded, yellow, hoary externally, with orange-coloured flaments. Capsule nearly globose.

20. V. Boerhanufl. Boerhaavian Mullein. Linn. Mant. 45, excluding the reference to Miller; see n. 8. Wildn. n. 3. (V. blat-
VERBASCUM.

(V. blattarize folis nigrum, ampliorius floribus luteis, apicibus purpurascensibus; Boerr. Lugg.-Bat. v. 1. 228.)—Leaves obovate, somewhat lyrate, doubly crenate, veiny, slightly downy. Spike interrupted. Flowers in nearly sessile tufts. Bracteas all linear.—Said to be a native of the south of Europe. The Linnean specimen grew in the Uppsal garden. This species is very little known, perhaps from Linneus having cited a plate of Miller's, which is as little like his specimen as almost any Verbasum can be, and belongs to V. pluoides. Hence V. Borchartii is admitted, without sufficient grounds, into the catalogue of our garden plants. We have, at least, never seen any thing answering to it. The leaves are a foot long, and almost four inches broad, membranous, copiously reticulated with veins; pinna-tifid, in a lyrate manner, at the base; nearly smooth on the upper surface; the under partly clothed with light, deciduous, flary wool, resembling mouldinefs. Spikes (whether solitary or numerous, does not appear from the specimen) a foot long, slightly and loosely woolly, of numerous scattered tufts of large yellow flowers with purple flaments.

21. V. harmsroidale. Madeira Mullein. Ait. n. 5. Willd. n. 4.—"Leaves ovate-oblong, downy, slightly and minutely crenate; tapering at the base. Clusters elongated. Flowers in sessile tufts, without bracts."—Native of Madeira, from whence it was brought to Kew by Mr. Maffon, in 1777. This is marked as a biennial greenhouse plant, flowering from June to August.


2. V. Thaph.; Linn. Sp. Pl. 1669. (V. Thaphoides; Willd. n. 2. Ait. n. 3. Hoffmann. et Link Fl. Litt. v. 1. 214.) V. angulifolium ra-mofum, flore aureo, folio craffio; Bauh. Hist. v. 3. 860.)

Leaves wedge-shaped-oblong; flippred of down on their upper side. Stem angular, panicked. Native of palures, road-fides, and waste ground, in various parts of Europe, flowering in July and August. In England it rarely occurs, except on chalky ground in Kent, where it abounds. The root is biennial, scarcely perennial. Stem a yard high, strait and upright, finely downy; copiously panicked at the top. Leaves elliptic-oblong, tapering at the base, crenate, reticulated with veins; white and woolly beneath; dark green and slightly downy, or quite naked, above; thofe at the root, and lower part of the stem, blafked; the rill fett, not decurrent, all narrow at the base. Branches of the panele racemose, with many woolly tufts of blafked, rather small, flowers, whose corolla is cream-coloured, tinged with yellow. Filaments yellowish, hairy. Anthers orange, coloured, uniform.

The variety 3, a very celebrated and much disputed plant, is not preferred in the Linnean herbarium. It is described as the mule offspring of V. Lychnitis, from the pollen of V. Thaphi. We have specimens, artificially produced in this manner, by Dr. Griffith, of Garn, Denbighshire. These agree with the Portuguese plant, bent by professor Link, as his V. Thaphioides. So that we conceive the real V. Thaphi, or Thaphioides, is before us. Yet there are parts of the Linnean description, Sp. Pl. 1670, that puzzle us; such as the purple beard attributed to the filaments of V. Lychnitis and of this variety. Our specimens are intermediate, in every respect, between Lychnitis and Thaphi. Their corolla is yellow. Beard of the filaments white. Upper leaves somewhat decurrent. As the real


2. V. nigro-pulverulentum; Fl. Brit. ibid.

Leaves ovate-oblong, obscurely serrated, covered on both sides with powdery deciduous wool. Stem round, panicked, much branched.—Native of banks, and the borders of fields, on a gravelly or chalky soil, in England, Austria, and Switzerland, flowering in July. This beautiful and flately plant is frequent about Norwich, and most parts of Norfolk; also near Bury, Suffolk; and, according to Ray, at Wollerton, near Nottingham. No species can be more diftinct from the last, with which it has been confused, even by Linneus. The root is biennial. Stem three or four feet high, branched from top to bottom in a conical form, covered with innumerable golden flowers, larger than the half, whose filaments are clothed with white hairs, and their anthers are vermilion. The whole herbage is invested with white mealy down, easily rubbed off. Leaves all fett, thick and woolly; the radical ones numerous, a foot long; upper ones ovate, pointed, clasping the stem, not decurrent. Mr. Sieber has lent an Austrian specimen of this species, named V. flocofoam; but we know not of its having been published under that denomination.

Our variety 3 is found near Hellesdon, and in other parts of Norfolk. The leaves are like pulverulentum, flowers, and purple woody flaments, like nigrom; so that, according to the opinion of Linneus, the latter was the mother of this apparently mule production. We believe it moreover to be perennial.

V. pulverulentum displays a remarkable degree of irrigability, if the stem be frantly dry, twice or thrice, with a small fllick. In the space of a few minutes, the flowers close, and begin to drop off, all in their turn falling to the ground in the space of a quarter of an hour, if the weather be warm and still; if otherwife, this quality is less perceptible. We were first informed of it by the very ingenious Mr. Correa de Serra.

24. V. gallicum. Dauphiny Mullein. Willd. n. 11. (V. Chaxi; Villars Dauph. v. 2. 491. t. 13; synonym all very doubtful.)—Leaves ovate-oblong, crenate, downy beneath; radical ones flaked; heart-shaped and pinnatifid at the base. Stem angular, panicked at the top.—Native of several parts of Dauphiny, in rocky situations. The habit of this plant, its panicule, and the soft durable pubescence of the backs of its leaves, as well as the shape of such as grow on the stem, mottelable V. Lychnitis; the yellow flowers, purple hairy flaments, as well as the size, form, and long footstalks of the radical leaves, which are doubly crenate, rather accord with V. nigrom. But these radical leaves are remarkable for a few deep parallel segments at their base. We have a specimen from the author himself, or his bad figure would little avail us.

The late Mr. Donn favoured us with a specimen, above twenty years ago, from the Cambridge garden, of a tall Mullein, agreeing with this in most respects: but the lower leaves are taper at the base, and finely pinnatifid. This came from Poland, and is doubtless V. polandicum of his Hort. Cantab. ed. 5. 451; but unfortunately a name does not make a species, any more than flocofoam of the same useful work, see our n. 73. This Polifh plant seems a mule between
between nigrum and Lychnitis; or it may be a variety of gallicicum.

25. V. nigrum. Dark, or Black, Mullein. Linn. Sp. Pl. 253. Willd. n. 8. Fl. Brit. n. 4. Engl. Bot. t. 59. Ger. Em. 775. Fl. Dan. t. 1088. (V. tertiurn; Matth. Valgr. v. 2. 489.)—Leaves oblong-heartshaped, stalked, waved and crenate, slightly downy. Clutter solitary, spikelike, many-flowered.—Native of banks, and road-sides, in most parts of Europe. With us it occurs chiefly on a chalky or gravelly soil, in shady lanes, or on glairy hillocks, flowering in July and August. The root is perennial. Stem erect, simple, angular, leafy, brown or purplish, two or three feet high, rarely branched. Leaves of a fine deep green, not hoary, though somewhat downy; all stalked, except the very small upper ones. Clutter very long, slender, compact, though here and there interrupted, composed of innumerable tufted golden flowers, with bearded violet filaments, and orange anthers. This is altogether a very elegant species.

We received, many years since, from the late Mr. Davall, specimens and seeds of a variety of this species, having white flowers. These dried specimens differ little from our wild plant, except a slight degree of luxuriance, owing to culture, nor can it be doubted that they are the white-flowered variety, mentioned by Caspar Bauhin, and others. But the far more luxuriant progeny from their seeds, in lady Amelia Hume’s garden, bore large copper-coloured flowers, almost like V. cupreum, Curt. Mag. t. 1226, which, for its solitary flower-flasks, we should believe to be our plant. Such is the Proteus-like nature of this whimsical genus!

26. V. ferrugineum. Ruly Mullein. Ait. n. 9, excluding the reference to Andrews. Willd. n. 7.—Leaves somewhat villous, wrinkled; thoe on the stem nearly febil, equally crenate; radical ones oblong-heartshaped, doubly crenate.—Native of the south of Europe; said to have been cultivated, at Edinburgh, by Mr. Sutherland, in 1683, and marked by Mr. Aiton as a hardy perennial, flowering from May to August. We have no specimen, but we remember to have examined an authentic one in Sir Joseph Banks’s herbarium, which proved totally unlike the Greek plant of Dr. Sibthorp, figured as ferrugineum by Mr. Andrews, which is our V. trilfolium, hereafter described. Such errors are execrable in such a tribe. We have a notion that the specimen betrayed some affinity to V. Boerhaaeii, n. 20, but we dare not affirm it.

27. V. trilfolium. Brown-flowered Mullein. Prodr. Fl. Grec. n. 529. (V. ferrugineum; Andr. Repof. t. 162.)—Leaves elliptical, wavy and partly toothed, nearly fmeath; radical ones stalked. Clutter solitary, simple. Stem leafy.—Gathered by Dr. Sibthorp on Mount Athos. By his means the plant has been introduced into the gardens of England, where it proves a hardy perennial, flowering most of the summer, and propagating itself copiously by seed, without requiring any care. This species differs from all the foregoing, in its very long simple clutter terminating the stem at first drooping, but gradually becoming erect, and, as it flowers, extending itself to the height of five feet, being composed of innumerable, scattered, solitary, spreading, almost capillary partial flasks, each three or four times as long as its accompanying lanceolate bractese, and bearing a solitary nodorous flower, an inch broad, of a peculiar dull greenish or yellowish brown, whose filaments are densely bearded with purple. Sometimes, from luxuriance, two of these flasks grow together, but each has always its own bractea. The whole clutter, bractea, and obtuse calyx, are clothed with glandular vifcid hairs. The radical leaves

are numerous, on longish stalks, wrinkled, slightly downy, a little veifcid, green, reticulated with veins; their margin variously waved, or bluntly toothed: those on the stem are nearly fsehile, ovate or heart-shaped, more or less acute. We cannot perceive any alteration in this plant after cultivating it for fifteen years, and yet there is scarcely a permanent specific character, to distinguish it from the following. Can Tournefort’s Blattaria orientalis, bugula folio, &c. Voy. v. 2. 83, with a plate, acknowledged to be a variable plant, possibly belong to our trilfolium?

28. V. phaeum. Purple-flowered, Mullein. Linn. Sp. Pl. 254. Willd. n. 9. Ait. n. 11. Jacq. Austr. t. 125. Curt. Mag. t. 885. (Blattaria flore purpeo; Ger. Em. 776.)—Leaves ovate, crenate, smooth, chiefly radical and fsehile. Clutter solitary, simple. Stem nearly leafless.—Native of Austria, and the south of Europe. A hardy perennial, cultivated in England ever since Gerard’s time. It is of more humble growth than the last. Leaves chiefly radical, and nearly fsehile, scarcely at all downy; their margin finely or doubly crenate. Inflorifcence like the preceding, but the flowers are of a dark violet hue, and the filament less hairy. Sometimes the stem becomes leafy, as in Jacquin’s figure, and perhaps, as he represents it, branched; but we have never seen an instance of the latter.

29. V. ovifolium. Oval-leaved Mullein. Donn. Cant. ed. 5. 45. Siims in Curt. Mag. t. 1037. Ait. n. 2.—“Leaves oval, fsehile, acutely crenate; smoothish on the upper side. Stem erect, simple. Flowers spikelike.”—Native of mount Caucasus. Introduced into England by Mr. Lodidges, in 1804. A hardy biennial, flowering from July to September. This has the aspect of several species in our first figure, the flowers being as large as any of thofe, yellow, with orange-coloured, partly hairy, filaments; and nearly fsehile, in a long dense spide. But the leaves are not deciduous, nor, though downy, at all hoary or woolly. We have seen no specimen.

Dr. Sims has exhibited in Curt. Mag. t. 1226, by the name of V. cupreum, a Mullein, whose stalked leaves, and racemose flowers, variegated with tawny-buff and purple, each on a partial clatter of considerable length, all appear to differ from V. ovalifolium, the bractea, and calyx like—wide, being altogether unlike the figure of this species, that, but for our confidence in its excellent cultivator Mr. Lodidges, we could scarcely believe it came up from seeds of the ovalifolium. Perhaps, as Dr. Sims suggests, the parent may have been impregnated by V. phaeum, or we would rather lay our trilfolium. When the plant blooms within-doors, the corolla is pale yellow, with a purple eye. The inspection of this plant is enough to damn the most ardent student of species of Verbasculum, and to cause a general mistrust of them all.

30. V. virgatum. Large-flowered Primrose-leaved Mullein. With. Bot. Arr. 250. Fl. Brit. n. 5, Engl Bot. t. 530. Ait. n. 12. (Blattaria flore ampio; Ger. Em. 778. B. magni flore; Bauh. Hilf. v. 3. 859. L. 1c. 564.)—Leaves ovato-lanceolate, toothed, fsehile; heartshaped at the base; radical ones downy, and somewhat lyrate. Stem branched. Flowers axillary, on short flacks, partly aggregate.—Native of Worcecthire. Biennial, flowering in July and August. Stem five or fix feet high. Whole plant green, not hoary, though more or less covered with short, prominent, often forked, glandular hairs. The radical leaves, which resemble those of a primrose, are always so clothed. Those on the stem are very numerous, acute, toothed or sharply crenate, broad and rounded at the base, gradually diminishing upwards. Flowers from the bofoms of many of the upper leaves, large, yellow, some

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Vermont nearly coming the town Verbascum. English the the nor and a common Geography, the stranger and in spinifolium. Blat-A Botany, L. Ger.

Two former, illustrated with spinifolium rigid primul. Flowers become Bauk. gardens, partially bright flowers, or fpecies

Two of the lowermost five, or six together, the right solitary, as are all those of the weaker branches. Flower-stalks hairy and viscid, seldom so long as the calyx, whose segments are lanceolate, acute, and glandular. Filaments bearded with purple. Anthers uniform.

31. V. Blattaria. Moth Mullein. Linn. Sp. Pl. 254. Wild. n. 10. Fl. Brit. n. 6. Engl. Bot. t. 393. (Blattaria flore luteo; Ger. Em. 778.)—Leaves oblong-lanceolate, acute, smooth, serrated; lower ones bluntish, tapering at the base, or flaked. Stem branched, racemose. Flower-stalks much longer than the bracteas. —Native chiefly of the southern parts of Europe, rare in England, flowering in July. Root tapering, annual. Stem three or four feet high, leafy. Leaves much narrower, and more deeply serrated or notched than in the last, the upper ones becoming gradually more pointed, and smaller, to the bottom of the long simple clumps, where they are replaced by a small, solitary, lanceolate bract, under each flower-stalk, as in V. triloba and phanicecum. The corolla is smaller than the last, bright yellow, more or less streaked with purple. Filaments clothed with purple hairs; sometimes the corolla seems to become purplish all over.

A supposed variety, with large white flowers, marked partially with purplish-brown at the back, is common in gardens; coming up from seed, and remaining unaltered, through many successive years. This is Blattaria alba, Bauh. Pin. 241, but we can discover no specific difference between it and the wild or cultivated yellow-flowered kind.

32. V. phlomoides. Thorny Mulllein. Linn. Sp. Pl. 254. Amoen. Acad. v. 4. 397. Wild. n. 16. Vahl Symb. v. 2. 39. Sm. Fl. Grce. Sibth. t. 229. (Leucocoeo phlomoides erectum; Cluf. Hift. 299. Ger. Em. 459. L. phlomoides strictum; Alpin. Exot. 37. t. 36. Gaalattidiva primi Candidi; Pop. Bald. 114.)—Stem leafy, shrubby, much branched, spiny. Leaves all flaked, hoary.—Native of the higher mountains of Crete; a stranger in our gardens, even by name. This differs widely from all the rest, in its hardy, shrubby, bushy stem, a foot high, whose very compound branches harden at their points into smooth rigid thorns. Leaves crowded, an inch or inch and half long, oblong, obtuse, deeply toothed, downy and white on both sides; contracted at the base into the flower-stalks. Flowers scattered, flaked, lateral and terminal, yellow, hardly above half an inch broad. Stamen orange-coloured. Calyx obtuse. Capsule small, villous.

Two other species, mentioned by Linnaeus, remain to be noticed; V. Ojhecki, and V. Mycena, Linn. Sp. Pl. 255. The former we have shewn to be the Triguria of Cavanilles (fee that article) nor does it answer to the characters of a Verbascum. The latter, figured in Curt. Mag. t. 236, an elegant, herbaceous, stemless plant, long known in our gardens, appears to be the Ramonda of Schradter and others, as we have mentioned in our remarks subjunctive to the generic character of the present genus, from which this species must, doubtless, be excluded.—Wildenow has a V. Bannatii, adopted from Vahl’s Symb. v. 2. 39, and compared with V. Ojhecki. With this we are quite unacquainted.

From the present view of Verbascum, more complete than any that has hitherto been given, and yet so far from perfect, the reader may chiefly learn that no certain limits have as yet been found for many of the species of this genus, while others, apparently much alike, remain permanent and distinct. To fix them all, a long course of experiment, by crofs impregnation, would be necessary.

Verbascum, in Gardening, furnishes plants of the hardy, annual, biennal, and perennial kinds, among which the species cultivated are, the annual mullein (V. boerhaavi); the moth mullein (V. blattaria); the great mullein (V. thapsus); the woolly mullein (V. phlomoides); the white mullein (V. lychitits); the scollop-leaved mullein (V. finatum); the rufy mullein (V. ferrugineum); the purple mullein (V. phanicecum); and the borage-leaved mullein (V. myconi).

In the first fort the flowers have an agreeable scent at a little distance; but if smeal too long, or too near, it becomes less pleasant.

The second fort has white flowers, which are streaked more or less with purple, and is very ornamental, flowering from July to November, or even later in mild weather.

It varies with white flowers.

The third fort has a biennial root, and the flowers are of a bright yellow colour, and sometimes, but rarely, white.

The fifth fort is remarkable for its straight wand-like angular stem, and cream-coloured flowers, which are produced in great numbers in a compound clustered terminating raceme. Sometimes the colour of the flowers is yellow.

The ninth fort has the flowers large in proportion to the size of the plant, of a blueish-purple colour, and highly ornamental, somewhat like the auricula, appearing in May, and continue successively in blossom for several months. It is a desirable plant to cultivate, especially for decorating rock-work.

Method of Culture.—These plants may all be increased by seeds, and offsets taken from the roots.

The well-ripened seeds should be sown in the autumn, or early spring, in a bed of light mould, or in the borders or other parts where they are to remain, covering them lightly in. When the plants are up a few inches in height, in the bed method, they should be removed into nursery rows till the autumn, when they must be removed to where they are to remain.

The annual fort is, however, best sown at once where the plants are to grow, which is best done in patches.

The offsets of all the perennial forts should be taken off in the autumn, or very early in the spring, and be planted out where they are to grow. This is better than afterwards transplanting them.

They are all hardy plants, that succeed in almost any common soil and exposure, in borders, &c.

They afford a good effect in their different foliage, modes of flowering, and sweet scent of their flowers, in the large borders, clumps, and other parts of pleasure-gounds; the larger forts being placed backwards in them.

VERBELIET, in Geography, a town of Hungary; 6 miles S.W. of Erlau.

VERBENA, in Botany, among the Romans, was the name of some evergreen aromatic shrub, esteemed sacred, and employed in various solemn ceremonies. Hence it was called Hierobotane, and Herba sacra. Some derive Verbena from verro, to sweep, or cleanse; because the plant might be used for cleaning the altars or temples; others from Her- benna, corrupted from herba bona, or good herb. But these rather prove that no good Latin etymology was to be found. De Theis gives a much better, and indeed a direct, derivation of the word, from Blullet’s Dictionaire Celtique, where the Celtic name of the plant is said to be Ferfas, whence comes, still left changed, its English appellation, Vervain. The Roman shrub, above alluded to, is sometimes thought to have been our Rosemary, which could hardly be the Celtic plant; and we must rely on tradition, which has handed down our Common Vervain, the Linnaean Verbena, with much superstitious celebrity, even to the present day, as the Ferfas of our barbarous ancestors. It still, from time to time, makes the fortune of quacks and village
V. mexicana. Mexican Vervain. Linn. Sp. Pl. 28. Willd. n. 6. Ait. n. 1. (V. mexicana, tracheliol folio, fruets aparines; Dill. Elth. 407. t. 302.)—Leaves ovate, acute, harfl. Spike lax. Calyx of the fruit reflexed, hilpild, of two round lobes. Seeds two.—Native of Mexico. Cultivated in Sherard's garden in 1726. A flowe plant, flowering in summer. *Stems* herbaceous, two or three feet high, square, leafy, rough and furrowed, branched in the upper part. *Leaves* opposite, on short stalks, strongly ferrated into those of a common nettle, rough with minute rigid bristles. *Spike* terminal, flalked, ecret, long and slender; lax and interrupted in the lower part. *Flowers* very numerous, small, pale purple. The *calky* when in fruit becomes flalked, recurved, timid, and is at all times hoary with brily hairs. We are not certain that this species has always four perfect *flaemen*. Two of the *anthers* are most visible in the mouth of the tube. 

2. V. flachofolia. Oval-spiked Vervain. Linn. Sp. Pl. 27. Willd. n. 7. Ait. n. 2. (V. n. 4; Browne Jam. 115. t. 3. f. 1.)—Lavandula frutescent, folis latioibrois crenatis; Plum. 1c. 154. t. 162. f. 1.)—Spikes denfe, imbricatis, ovulo-cylindricis. *Leaves* lanceolate, woody, toothed, clothed with depreffed hairs; hoary beneath. Stem hardy. —Native of the West Indies. *Stems* spreading five or six feet, woody, but not lafting above two or three years. The *leaves* are flalked, two or two and a half inches long, acute, reticulated with veins, flat, not plaited, as the erroneous engraving, after Plummer's drawing, is made to express, but wavy at the margin, with small acute teeth; the upper surface is covered with rigid depreffed bristles; the under with softer hairs. *Spikes* hairy, an inch long, about thrice the length of their *flaemen*. Of the *flamens*, *leaves* or colour of the *flowers* we are ignorant.

3. V. globiflora. Round-headed Vervain. L'Herit. Stirp. 23. t. 12. Willd. n. 8. (Nheta maxima, flore albo, ficica habitutis; Sloane Jam. v. 173. t. 108. f. 1.)—Spikes denfe, imbricatis, roundifh-ovatis. *Leaves* ovate, crenatus, rugosæ, downv. Stem hardy, erect. —Native of South America; perhaps, as L'Heritier thought, of Buenos Ayres. We have from thence a specimen somewhat like it, but smaller in every part, possibly because it is a wild one. L'Heritier's plant was cultivated at Paris, being a *fubur* of humble growth, of a strong disagreeable odour. The *leaves* are shorter and more ovate than in the last, differing also from that species in being finely and closely crenate, not wavy or toothed. The *spikes* also are much shorter, nearly globose. *Flowers* white. *Stamens* four, all perfect. *Seeds* two.

4. V. javanica. Java Vervain. Burm. Ind. t. 2. f. 2. Willd. n. 9. (Zappania javanica; Poir. in Lam. Dict. v. 8. 840.)—Spikes denfe, imbricatis, cylindricis. *Leaves* elliptic-lanceolati, crenati, finely downv. —Native of Java. *Stems* ascending, roundifh, clothed, like the rest of the plant, with fine, ftshort, close hairs. *Leaves* an inch and a half long, acute at each end. *Flowers* in short cylindric *spikes*, on axillaries, often opposite, *flaemen* of the length of the *leaves*. *Linneas* fulfilled this not to be different from *V. flachofolia*, but they are very unlike in the margin of their *leaves*, as well as in general appearance.


6. V. bonariensis. Clutter-flowered Vervain. Linn. Sp. Pl. 28. Willd. n. 11. Ait. n. 5. Poir. in Lam. n. 13. (V. bonariensis altiflora, lavandule canariensis *spicâ* multiplici; Dill. Elth. 406. t. 300.)—Spikes aggregate, tufted, level-toppted. *Leaves* lanceolate, leaff, clapping the *flerum*. —Native of Buenos Ayres, from whence it came into Sherard's garden; and is still seen in some curious collections, being a hardy biennial plant, flowering throughout autumn. The *flerum* is often six feet high, square, rough, clothed with long, harfl, coarrefly ferrated *leaves*, and terminating in copious tufts of blue *flowers*, made up of short *spikes*, on very long, opposite, paneled *flaemen*. *Seeds* four, linear, striated, curiously rough on the inner side.

7. V. rugosa. Rugose Vervain. Willd. Enum. 633. Purth. n. 8. (V. angustifolia; Michaux Boreal.-Amer. v. 2. 14. Ait. n. 7. Poir. in Lam. n. 11.)—Spikes thread-shaped, solitary, terminal or axillary. *Leaves* lanceolate, sparingly ferrated, furrowed with veins; tapering at the base. —In dry soil, by road-sides, particularly on lime-stone, from Pennsylvania to Tennessee, flowering from June
VERBENA.

tid.—By road-sides in wet situations, and on the banks of rivers, from Canada to Carolina, perennial, flowering in July and August. From two to five feet high. Flowers purple, sometimes white. Purflb. The leaves are three inches, or more, in length, rough to the touch, like a fine file. Spikes two inches long, becoming longer, and lax, after flowering.

11. V. triphylla. Lemon-scented Vervain. L'Hérit. Stirp. 21. t. 11. Willd. n. 13. Ait. n. 4. Curt. Mag. t. 357. (Zappania citrodora; Poiret in Lam. Dict. v. 8. 845.)—Spikes panicled. Leaves lanceolate, minutely and dually toothed, three in a whorl. STEM hrubby.—Native of Chili, where it was found by the unfortunate Doméry, (see that article,) and introduced into the gardens of Europe. In Italy, Spain, and the south of France, this valuable shrub is quite naturalized, and its delightfully scented leaves, having the flavour of lemon, are useful in fevers, and other inflammatory disorders, being taken as tea, like balm, hyflop, &c. With us it is a hardy greenhouse plant, flowering in summer. The Laves are of a light bright green, roughish, two inches long, apparently entire to a flight oblique, foan dressing, and fragrant for a long time afterwards if rubbed. Flowers small, pale lillac, in aggregate, panicled, loose, terminal spikes. The specific name of this plant is not well known, to many Peruvian and Chili shrubs having three leaves in a whorl. Ortega, who thought it a new genus, called it Alyxia citrodora, and the French retain the latter appellation, as if circa would not far more elegantly express their meaning. But who shall weed the rank wilderness of recent botanic names? in which the venerable fabric raised by Linnaeus is almost hidden, like the temples at Paftum, before they were cleared.

date heads. Uppermost anthers club-shaped at the back. Leaves whorled, wedge-shaped, undivided or lobed.—Native of Peru, in fandy situations, flowering in August and Sep
tember. The flens are numerous, erect, much branched, hoary; naked below. Leaves five or six in each whorl; some entire, linear-lanceolate, revolute; others divided or three-cleft, hardly an inch long, moderately downy, a little fringed. Flowers terminal, felled, collected into a head in the form of an umbel, each with one or two linear, oblong, downy, fringed bracteas. Corolla purplish-red. Stamens four. Anthers heart-shaped, furmounted by a small club-shaped appendage. Seeds four. Poiret.

tered. Leaves ovate, acute, sharply serrated.—Native of waite ground and stony places, in the West Indies. The flens are herbaceous, two or three feet high, branched, leafy, square, smooth, hollow. Leaves falked, two inches long, slightly brifly. Clusters from the forks of the stem, long, weak, and slender, of numerous, diftant, little, pale-blue flowers, on very short flals. Calyx downy; as the fruit ripens becoming globule, including the four hard seeds, which are closely combined, befit externally with four thick spines. Dr. Swartz, in his Flora Ind. Occ. 1909, points out the affinity of this species to his own genus Ghinia, (see that article,) founded on Verbena ceroovifaca of Lin
teus. The fruit of Ghinia, however, is a drupa, with a nut of four cells.


15. V. caroliniana. Carolina Vervain. Linn. Sp. Pl. 29. Willd. n. 16. Ait. n. 8. Pursh n. 9. (V. carolinensis, meliflæ folio, aspero; Dill. Eth. 407. t. 301.)—Spikes aggregate, lax and slender. Leaves elliptic-lanceolate, acute at each end, forked, nearly fide; rough above; somewhat downy beneath.—In dry sandy fields, from Caro
olina to Georgia, perennial, flowering in June and July. Purflb. Herb erect, branched, somewhat hairy. Leaves harth, with minute brifly tubercles, on the upper side, an inch and a half or two inches long, unequally, not deeply, ferral. Flowers pale red, very small. Calyx brifly, twice the length of the minute, ovate, pointed bracteas. Seeds four, oblong.

16. V. urticifolia. Nettle-leaved Vervain. Linn. Sp. Pl. 29. Willd. n. 17. Ait. n. 9. Pursh n. 6. (V. folio urtice angustiore; Rivin. Monop. Irr. t. 57. V. reço canadensis; Morf. fit. 11. t. 25. f. 3. V. peregrina, foliis urticæ; Dodart Mem. 627. t. 53.)—Spikes aggregate, lax and slender. Leaves ovate, acute, forked, falked, hairy on both fides.—About road-sides and culti
cated grounds, from New England to Carolina, perennial, flowering from June to September. Flowers very small, white.
white. *Purp.* Akin to the last, but taller, and clearly distinguished by its flaked, coarsely serrated, nettle-like leaves. *Braetes* ovate, slightly pointed, shorter than the calyx.

17. *V. stridula.* Stout Upright Vervain. Venten. Hort. Cell. t. 55. Ait. n. 10. Willd. Enum. 633. Pursh n. 10. Donn. Capt. ed. 5. n. 10. (V. rigens; Michaux Boreal-Am. v. 2. 14. *V. paniculata*; Donn. Capt. ed. 5. n. 8.) — Spikes aggregate, corymbose, straight, dense, obtuse. *Braetes* taper-pointed, as long as the calyx. Leaves ovate, on short stalks, unequally serrated, downy and hoary on both sides. Native of Carolina, and the Illinois country, perennial, flowering in July and August. *Purp.* A tall, stout, hoary plant, whose fluff round *flem* is clothed with numerous, coriaceous, veiny leaves, an inch and a half to two inches long, acute, coarsely serrated; mottled downy beneath. *Spikes* from two to four inches long, in strong plants numerous, crowded at the top of the stem, in a corymbose manner, hoary, imbricated. *Braetes* ovate, with taper points, generally exceeding the calyx, whose teeth are also long and slender. *Corolla* large, of a violet blue.

18. *V. diffusa.* Spreading Vervain. Poiret in Lam. n. 14. Pursh n. 7. — Spikes very long, lax, panicked, widely spreading. *Braetes* acute, about as long as the calyx. Stem erect, much branched. Leaves ovate-lanceolate, serrated, somewhat downy. — Native of North America; cultivated at Paris, according to Poiret, on whose authority Mr. Pursh gave this species a place in his Flora. He speaks of it as having a near resemblance to *V. urticaefolia*, with very small, somewhat purple, flowers. We have seen no specimen.

19. *V. paniculata.* Compound-panicked Vervain. — Lamarck Illust. v. 1. 57. Diet. n. 8. Pursh n. 5. — Spikes compound, in a corymbose panicle. Leaves lanceolate, deeply serrated and jagged; tapering at the base; harsh on both sides, slightly downy. — In the natural meadows of the high mountains of Virginia and Carolina, perennial, flowering in July and August. — From four to six feet high. *Flowers* very numerous, purple. We have from the Paris garden a specimen marked *V. paniculata* of Jullien, which answers well to the description by Poiret in Lamarck’s Dictionary, and is doublets of what they all intended. Our specimen indeed is but eighteen inches high, and the leaves are about two inches, not four or five, in length. They taper down into short flanks, and are not much pointed. Both surfaces are rough like a file, as is likewise the square *flem*, which terminates in a corymbose *panicle* of compound or branched *fiskes*. The *Braetes* are ovate, with a fine point, shorter than the calyx. *Corolla* rather small. — What we received from the late Mr. Donn of Cambridge, as his *V. paniculata*, is not this, but our *fridula*, n. 17.


ground in Peru, flowering from March to May. The whole plant is bristly, two feet high, branched. Leaves sessile, half clasping the stem; contracted at the base; divided almost half way down into three large, oblong, ferrated lobes, rough and hispid on both sides, two or three inches long, and about as broad. Spikes short, ternate. Flowers blue. Poiret.


Native of Illinois and Kentucky, perennial, flowering in July. Flowers light purple. Pursh. A small very hairy plant, said to have some resemblance to V. supina, n. 23, but the long wide-spreading bracteas are peculiar. The stems are from six to nine inches in length. Spikes from the ends, as well as the forks, of the branches, two or three inches long. Seeds only two.

27. V. Aubletia. Rose-coloured Vervain. Jacq. Hort. Vind. v. 2. 82. t. 176. Lindl. Suppl. 86. Willd. n. 18. Ait. n. 11. Pursh n. 1. Curt. Mag. t. 308. (Buchnera canadenis; Lindl. Mant. 88. Obletia; Journ. de Rozier, v. 1. 367. t. 2. Erinus lacinianus; Lind. Sp. Pl. 879. Lychindea verbeana tenuifolia; Feuille. Peruv. v. 3. 35. t. 25.)—Spikes capitate, solitary; cylindrical after flowering. Bracteas awl-shaped, as long as the taper-pointed calyx. Leaves three-lobed, cut. Stem erect.—Native of Carolina and Georgia, flowering in June and July. The seeds appear to have been brought to Europe by M. Richard, senior, and were sent by him to Kew garden, in 1774. The plant is biennial in our climate, requiring the shelter of a frame in winter. The herbage is green, roughish to the touch. Stem a foot high, or more, square, leafy, branched from the bottom. Leaves flaked, broadish, variably cut. Flowers larger than most of the genus, of a fine pink or crimson, numerous, in flaked heads, which afterwards become thick, close, cylindrical spikes. The bracteas are very narrow, permanent, downy as well as the calyx, whole teeth are also very long and slender. Seeds four, oblong; furrowed in the lower, reticulated in the upper part. This is undoubtedly a genuine and most obvious Verbenas, nor can we account for the error of Linnaeus, who, with the ripe naked seeds on his original specimen, and the long-pointed calyx, referred it to Buchnera. It was called Obletia, either by its discoverer, or by La Tourrette, who sent a specimen and figure to Linnaeus, by which the latter corrected his mistake. Their intention was to honour Aublet, whose name was sometimes written Oblet. With respect to the other Linnaean synonym, hitherto neglected by most of those who have noticed this Verbenas, it depends entirely on Feuille's plate and description, which led Linnaeus to refer this, as well as the following species, to Erinus, without seeing a specimen of either. Lamarck, Poiret, and Willdenow, apply these latter synonyms to their V. erinoides, Willd. Enum. 634, which is V. multifida, Fl. Peruv. v. 1. 21. t. 33. f. C.

28. V. veronicaefolia. Speedwell-leaved Vervain. (Erinus peruvianus; Lindl. Sp. Pl. 879. Lychindea veronicea folio, flore coccineo; Feuille. Peruv. v. 3. 36. t. 25.)—Spikes capitata, solitary, cylindrical after flowering. Bracteas awl-shaped, as long as the taper-pointed calyx. Flowers ovate, ferrated, acute at each end. Stem erect.—Found by Feuille in fields on the north side of the river de la Plata, in Paraguay. This seems to agree with the habit in the flowers and inflorescence, differing only in the simple undivided form of the leaves; but whether that difference be constant and specific, can be determined by future comparison of the two plants. The other synonym of Feuille having been misidentified, and, as we presume, distinguished without reason from V. Aubletia, we have here recorded this for the consideration of those who may hereafter meet with materials for solving our doubts.

VERBENA, in Gardening, contains plants of the hardy, herbaceous, and tender exotic kinds, among which the species cultivated are, the Indian vervain (V. indica); the trailing vervain (V. supina); the betony-leaved vervain (V. orubica); the Jamaica vervain (V. jamaicensis); the Mexican vervain (V. mexicana); the globe-flowered vervain (V. globiflora); the cluster-flowered vervain (V. bonariensis); the halbert-leaved vervain (V. haftata); and the three-leaved vervain (V. triphylla).

And there are many other species that may be cultivated for variety.

The first fort is an annual plant with a purplish flower. In the second fort the flowers are of a light blue colour, and large. The third arises with a shrubby flalk, and the flowers grow in thick terminating spikes about a foot in length; are large, and of a fine blue colour. The fourth fort is three or four feet high in the stem, and much branched, the flowers blowing in succession, beginning at the bottom, but very few together, violet-coloured, with the throat and long slender incurved tube of a white colour. The seventh fort has four-cornered flalks, which rise to the height of five or six feet, the flowers of which are blue, appearing late in summer. The eighth has many four-cornered furrowed flalks, which are terminated by spikes of blue flowers, in clusters, which appear in August. The ninth is a very sweet-smelling under shrub, and very pleasant, like that of the lemon.

Method of Culture.—These plants are not raised without difficulty or attention. They may be increased by seeds, which should be sown in pots, or on a hot-bed, in the early spring, plunging the pots in the bed. When they are in a state of growth to remove, they should be planted in separate pots, and re-plunged in a fresh hot-bed, shade being given till they have taken new root, when they must have the management of tender plants of the exotic kind. The annual forts should be kept in the flower, or a glass case, where there is a bark-bed to plunge them in, when too large to be continued under the frames; and the perennial forts may be placed simply in such cases, air being admitted in a cautious manner.

Of these kinds, such as do not afford good seeds in this climate, may be increased by planting cuttings in the summer months in pots of good mould, placing them in the bark-bed of the flower, where they may be preferred many years. The eighth fort may be raised from seeds by sowing them in the autumn, and by parting the roots and planting them out at the same time. They succeed best on a soft loamy soil, and are so hardy as to thrive in the open air. The ninth fort may be readily increased, by planting cuttings in the spring or autumn in pots of good mould. It should have the protection of the greenhouse or a glass case. They afford variety among other potted plants in the greenhouse and flower, and some of the hardy forts occasionally in the open ground.

VERBENACA, in Botany, with the earlier botanists among the moderns, and even with Pliny himself, seems to be synonymous with Verbenas, see that article. Linnaeus indeed uses this word as the specific name of a common English species of Salvia, not supposed by any body, that we can find, to have been the so much honoured Verbena of the Romans, see Pliny, book 25. chap. 9. He was led to
to this adoption of the name by Triumfetti, who compares the division of the leaves of this plant to those of Verbena, or Ver Vain. The application, therefore, is faulty, and causes a confusion of ideas. See Salvia.

VERBENICO, in Geography, a town of the island of Veglia, with a small harbour, containing about 1200 inhabitants.

VERBERATION, formed from verber- \( \text{of the verb} \) \( \text{to strike} \), a term used to express the cause of found, which arises from a verberation of the air, when struck, in divers manners, by the several parts of the fowens body first put into a vibratory motion.

VERBERIE, in Geography, a town of France, in the department of the Oise: near it is a medicinal spring; 9 miles S. of Compiègne.

VERBESINA, in Botany, according to Ambrosius, who is followed by Linnaeus, Phil. Bot. 175, originated in Forskoh; which latter arose from the leaves being divided like a pair of forceps. Professor Martin, however, derives Forskoh from σφυς, 


Gen. Ch. Common Calyx concave, of several oblong, channelled-concave, erect, mostly equal leaves, in a double row. Cor. compound; radiated, of the numerous perfect florets in the disk funnel-shaped, five-toothed, erect; of the few (about five) female florets of the radius ligulate, either broad and three-cleft, or very narrow and undivided. Stam. in the perfect florets, Filaments five, capillary, very short; anthers united into a cylindrical tube. Pistil. in the same florets, Gennis rather oblong; style thread-shaped, the length of the flammers; filaments two, reflexed; in the female ones, the same. Pericarp. none, except the unchanged calyx. Seeds in all the florets alike, solitary, thickish, angular, crowned with a clefty crown of two, or more, acute teeth. Recept. covered with deciduous clefty scales.


Obf. We have shewn, under the article Phaethusa, that the genus established by Gaertner, with that name, is a real Verbena, though a Syngenia of Linnaeus. The bristly-pointed crown of the seed in the genus before us being wanting in V. Lavenia, alba and prostrata of Linnaeus, the two latter are removed to Eclipta, and the first to Lavenia; see those articles. The number of radiant florets is uncertain in many species.

Seet. 1. Leaves alternate.

1. V. alata. Wing-flaked Verbesina. Linn. Sp. Pl. 1727. Willd. n. 1. Ait. n. 1. Curt. Mag. t. 1716. (Cannabis indica, folii integra, alato caule; Magn. Hort. 40. t. 8. Chrysanthes Americanum, alato flore apollo globo aurantio, foliis baccharidis; Commel. Hort. v. 1. fol. 3. C. corallavicu, alato cale, flore globulis aurantis; Her. Parad. 125, with a plate.)—Leaves alternate, decurrent, undulated, bluish. Brittle of the seed two, very unequal.—Native of South America and the Weft Indies. Cultivated ever since the beginning of the last century in our florist, where it flowers most part of the summer, and being not uncommon, has been figured in more publications than we have thought necessary to quote, but which are cited by those mentioned above. The plant is perennial, hoary when young, erect, branched, three or four feet high, readily known by its winged stem. Leaves three or four inches long, veiny, wavy, and toothed. Flowers of a very rich orange-colour, almost globular, three quarters of an inch broad, on long, naked, alternate, or opposite, peduncle, at the ends of the branches. Florets of the radius, in our gardens at least, numerous. Seeds bordered with a membrane; their terminal awn-filament, rigid, one much longer than the other, incurved and hooked. Linnaeus has hinted that this species differs so much in habit and structure from the roll, as almost to constitute a distinct genus. Gaertner makes it the type of Verbesina, and yet asserts that this genus is only Spianthus with a radius. Indeed these two genera do run very much into each other, and the radius occasionally appears or vanishes in several species of each, nor are the bristles of the seed perhaps strictly constant even in the same species. We scarcely think the difficulty would be much lessened by removing V. alata to Spianthus, fee that article; though such a measure might be sanctioned by the habit of the plant. The remaining species, very various in habit, have not been sufficiently examined or compared to allow of a clear decision respecting them, and we must take them in general as we find them.


5. V. mutica. Parley-leaved Verbesina. Linn. Sp. Pl. 1727. Willd. n. 5. Ait. n. 2. Swartz Obs. 1746. 1. 175. (Bidens apiifolia; Linn. Am. Acad. v. 5. 452. Chrysanthemum palustre minimum repens, apiifolia; Sloane. Journ. v. 2. 185. f. 155. f. 1. Humile, ranuncula folio; Plum. 1. 85. f. 1.)—Leaves alternate, deeply three-cleft, toothed; radical ones obvate, serrated. Stems procumbent. Seeds without awns.—Found in rather moist pastures, and by way-fides, in the West Indies. Swartz. Miller cultivated it in 1768, from seeds sent by Houton, from whom Gronovius received specimens in 1732. This species,
Species, having no brily crown to the seed, belongs rather, as Dr. Swartz observes, to Anthemia; but the habit is somewhat adverese. The *flims*, a span long, spread every way on the ground, and are leafy, more or less branched. Leaves much divided and toothed; glabrous beneath. Flowers small, yellow, with numerous radiant florets. Seed bordered.

6. *V. Bofwellia*. Fennel-leaved Verbeina. Linn. Suppl. 379. Willd. n. 6.—Leaves alternate, three-cleft, with many capillary segments. Stems prostrate. Seeds hairy, with two bristles. Female floret solitary.—Native of the East Indies. Used by the natives in fomentations. An annual, herbaceous, decumbent plant, having the taste and smell of fennel; the divisions of the leaves also resembling that herb, only shorter and fewer. Flowers softly foliary, axillary or terminal, stalked. Calyx-seals few, broad, elliptical, with a membranous edge. Florets five or six only; of which one is ligulate and female; the rest four-cleft. Seeds compressed, black, clothed with faggy golden hairs, and crowned with two black bristles. Limnosus, or rather Koenig, who sent this plant, appears to have had an intention of making it a new genus, by the name of *Bofwellia*, which might have been done without violence to nature. We are not informed of the origin of the name.

7. *V. gigantea*. Great Pale Verbeina. Jacq. Coll. v. 18. 159. Ic. Tarr. t. 175. Willd. n. 7. Ait. n. 3. Swartz Ind. Occ. 1368. (Bidens frutecens, fihonphlyli folio et facie; Plumb. Ic. t. 1. 51.)—Leaves alternate, pinnatifid, finely toothed. Stem frutaceous.—Native of mountainous thickets, in Jamaica and other parts of the West Indies, flowering in December and January. Though often seen in our most curious flave collections, it is very rarely flowers. The stem is ten to twelve feet high. Leaves deeply pinnatifid; downy beneath; the lower ones twelve to eighteen inches long. Flowers small, white, or flesh-coloured, numerous, in large, corombose, terminal panicles. Seeds, according to Jacquin, crowned with a solitary bristle.

8. *V. Coreopfitis*. Alternate-leaved Winged Verbeina. Michaux Boreal.-Amer. v. 2. 134. Purf. n. 3. (Coreopfitis alternifolia; Linne Sp. Pl. 1283. Willd. Sp. Pl. v. 3. 2257. Jacq. Hort. Vind. v. 2. 50. 110. Chrysanthemum virginianum, caule alato, ramamius, flore minore; Plumb. Phyt. t. 150. f. 3. C. caule alato, virginianum, &c.; Moris. lect. 6. t. 7. f. 75. 96.)—Leaves alternate, lanceolate, serrated, toothed. Stem winged. Panicle corombose, leafy.—On the mountains of Virginia and Carolina; perennial, flowering from July to September. From three to seven feet high, the stem furnished with several narrow, green, entire, leafy leaves. Leaves four or five inches long, roughest on the upper side; the lower ones opposite, or three or four in a whorl; but the greater part are alternate. Flowers several, in a downy-stalked branched panicle. Calyx widely spreading, almost flat, so that the disk becomes nearly globose, subtended by four or five orange-coloured, spreading, ligulate florets, near an inch long. Seed crowned with two short bristles. This species is naturally very nearly allied to *V. Siegfbeckia*, hereafter described, fee n. 11, nor can they be genetically separated.

Michaux and Purf. mention a white-flowered variety, always defective of rays, found by the latter on the coast of Carolina, which is Athcanoja paniculata, Walt. Carol. 201. This Mr. Purf. strongly suspects to be a very different species.

9. *V. helianthoides*. Sun-flower Verbeina. Michaux Boreal.-Amer. v. 2. 135. Purf. n. 4.—Leaves alternate, broadly lanceolate, acute, slightly toothed; rough above; downy and hoary beneath. Stalks single-flowered, aggre-

10. *V. pinnatifida*. Pinnatifid Yellow Verbeina. Cavan. Ic. v. 1. 67. t. 100. Willd. n. 8. Jacq. Hort. Schoenbr. v. 3. 30. t. 305.—Leaves opposite, pinnatifid, serrated. Stem winged. Native of Mexico, flowering in the European flaves in December and January, but not yet known in the English collections. The stems are several, rather frutaceous, with four, slightly woody, membranous wings. Leaves about a foot long, tapering at the base. Inflorescence like *V. gigantea*, but the flowers are more numerous, yellow, with several conspicuous rays. Seeds crowned with two bristles.

11. *V. Siegfbeckia*. Half-rayed Verbeina. Michaux Boreal.-Amer. v. 2. 134. Purf. n. 6. Ait. n. 4. Purf. n. 2. (Siegfbeckia occidentalis; Linn. Sp. Pl. 1269. Phaethusa americana; Gartn. v. 2. 425. t. 169. Purf. 561. Chrysanthemum americanum, caule alato, amploribus folis hinnatis, floribus e palleste luteofentibus parvis; Pluck. Mant. 46. t. 342.)—Leaves opposite, ovato-lanceolate, serrated, toothed; tapering at the end. Stem winged. In shady woods, from Virginia to Carolina; perennial, flowering from July to September. A tall herbaceous plant, with four, or more, narrow, uninterrupted wings, running along the stem and branches. Leaves six inches long, undeviately, bright green; roughish above; downy beneath; the upper ones sometimes three in a whorl. Panicle terminal, forked, downy, leafy. Radiant florets from one to three, near an inch long, ligulate, bright yellow. We have already (see Phaethusa) given reasons for the above synonyms. Purf. rightly suspected these two plants to be the same, but retained Phaethusa out of deference to Michaux, who nevertheless has omitted it in his Flora.

12. *V. ferrata*. Serrated Downy Verbeina. Cavan. Ic. v. 3. 7. t. 214. Willd. n. 10. Ait. n. 5.—Leaves opposite, oblanceolate, with tooth-like frratures; downy beneath. Flowers corombose.—Native of Mexico. We have a garden specimen from the original author. Mr. Lambet received seeds from him in 1803. The root is perennial. Stems three feet high, erect, round, clothed with white cottony down, especially when young. Foot-flanks short, combined by a divided downy base. Leaves three inches long, strongly and unequally serrated; green, but rather silky, above; more hoary, and densely downy, beneath, conspicuously reticulated with veins. Flowers yellow, numerous, in a downy corombose panicle. Outer calyx-lower ovate, recurved. Rays four or five, broad, toothed. Seeds bordered, crowned with two short bristles.

13. *V. caenothifolia*. Five-ribbed Verbeina. Willd. n. 11.—Leaves opposite, ovate, serrated, with five combined ribs; their under side downy. Flower-flanks racemose, Paniced, axillary.—Native of the neighbourhood of Acapulco, in Mexico. The stem is round, erect. Leaves on short flanks, oblong-ovate, bluntly serrated, veiny, clothed on both sides with short flattened hairs; rough beneath. Flower-flanks long, from the borders of all the upper leaves. Akin to the following. Willdenow.

14. *V. bi flora*. Twin-flowered Verbeina. Linn. Sp. Pl. 1272. Willd. n. 12. ("Valliamanga-nari; Rheede Hort. Malab. v. 10. 79. t. 40") willd.—Leaves opposite, flat, ovate, serrated, with three combined ribs; their under side pales, scarcely downy. Flowers solitary or in pairs, on axillary and terminal flanks.—Native of the East Indies. The stem appears to be herbaceous, or slightly shrubby,
Shrubby, with forked and subdivided, fringed, nearly smooth, leafy branches. Leaves two inches or more in length, pointed, their three ribs united a little above the base; their upper side rough with minute depressed bristles; under smooth, or besprinkled with softer hairs. Flower-stalks long, either from the forks of the branches, or about their extremities, bearing one or two yellow flowers, an inch broad, almost always accompanied by a lanceolate leaf opposite to each partial stalk. Outer calyx-scales ovate, bristly. Radiant flowers several, elliptical, toothed at the end. Seeds abrupt, triangular, deli- tituate of a crown, or terminal bristles. The scales of the receptacle are obovate, concave, furrowed, abrupt, rough, at the extremity, resembling the inner leaves of the calyx. Linnaeus points out the affinity of this species to his V. Lavenia; but this regards their habit only, for Lavenia, now a separate genus, (see that article,) has a naked receptacle, and three bristles to the seed.

15. V. sativa. Oil-seed Verbesina. Sims in Curt. Mag. t. 1017. Ait. n. 6.—Leaves opposite, oblong; clasping the stem, distinctly serrated. Calyx simple, of five leaves.—Native of the East Indies; cultivated in the Mye country, and several other parts of India, for the sake of the expressed oil from its seeds, which serves as a substitute for that of Sesamum. Dr. Roxburgh found some of these seeds in 1805, to Mr. William Sallibury, the affiduous pofter of the botanic garden at Brompton. The plant is annual, either to keep in the flower, or raised on a hot-bed, and then planted out, flowering in autumn. Leaves four inches or more in length, green, not hoary. Flowers yellow, two inches broad, with about eight large broad radiant flor- ests, jagged or toothed at the end. The flowers stand on long simple stalks, from the forks of the stem, and botoms of the upper leaves. The simple calyx, of five broad leaves, agrees with that of the next species; so that, as Dr. Sims observes, if one could reckon a Verbesina the other must. We are not inclined to disturb them, because the whole genus, though in many respects very natural, fill labours under some strange exceptions and anomalies, which ought all to be well considered by those who attempt a reform.

16. V. calendulacea. Marigold Verbesina. Linn. Sp. Pl. 1272. Willd. n. 13. Ait. n. 7. (Caltha flore foliari- tario, ex alis foliorum longissimo pedunculo prodeunte; Burm. Zeyl. 52. t. 22. f. 1. "Pee Cajont; Rheede Hort. Malab. v. 10. 83. t. 42.")—Leaves opposite, oblong-lan- cecolate, very remotely serrated, fertile; taping at the base. Calyx simple, of five leaves.—Native of Ceylon, and other parts of the East Indies; cultivated by Miller. An annual flower-plant, flowering from July to September. The stem is branched, clothed, as well as the leaves, with rigid de- pressed bristles. The upper surface of the latter is, besides, usually rough with callous tubercles: their length and thae are variable, and their marginal ferratures are few and re- mote. Flowers yellow, not half the size of the leaf, on long, simple, mostly axillary, stalks. Radiant flowers from five to eight or ten, elliptical, toothed. Seeds very nu- merous, composing a globular head, wedge-shaped, abrupt, each crowned with two short bristles.


at Chelsea, and in Sherard's garden, being a tender annual, raised and kept in the flower, for the sake of curiosity, but having nothing to recommend it to popular notice. The stem is erect, a foot high, branched from the base. Leaves two or three inches long, broadly ovate, tapering suddenly into a winged footstalk. Flowers solitary, or in pairs, small, yellow, with several emarginate rays. Calyx certainly of two very different rows of scales, though the outermost consists of but two leafy ones. Seed crowned with two rigid awns.

18. V. dichotoma. Forked Verbesina. Willd. n. 15. Ait. n. 9.—Murray in Comm. Goot. for 1779. 15. t. 4.—"Leaves opposite, ovate, pointed, serrated, hairy, with three combined ribs. Stalks axillary, single-flowered. Stem forked."—Native of the East Indies. Annual. Whole herb befet with copious, short, white hairs. We have seen no specimen.

19. V. fruticosa. Shrubby West Indian Verbesina. Linn. Sp. Pl. 1271. Willd. n. 16. Ait. n. 10. (Bidens frutescens, ilicis folio, flore luto; Plum. Tc. 42. t. 52.)—Leaves opposite, stalked, ovate, serrated, rough, with three combined ribs. Stalks single-flowered, axillary. Stem shrubby.—Native of the West Indies. We have a specimen from Dr. Swartz, though this species is not mentioned either in his Prodromus or Flora. The stem is woody, re- peatedly branched and forked. The leaves appear to vary in hairs, as well as fize, but are always rough with minute tubercles. Flowers yellow, with numerous broad rays. Seed compressed, crowned with two bristles.

VERBESINA, in Gardening, affords plants of the herbace- ous and woody flowering exotic kinds, among which the species cultivated are, the wing-flaked verbesina (V. alata); the Chinesee verbesina (V. chinensis); the sily-flowered verbesina (V. nodiflora); the shrubby verbesina (V. frut- icosa); and the tree verbesina (V. gigantea). The first is an herbaceous perennial plant, with the flowers in fingle heads, of a deep orange-colour, appearing most part of the summer.

The second is a shrubby plant with yellow flowers.

The fourth rises with a shrubby stalk seven or eight feet high, and has yellow flowers.

Method of Culture.—These plants may be increased by fowing the seeds upon a moderate hot-bed, or in pots plunged into it, in the early spring months; and when the plants are of sufficient growth, they should be removed into separate pots, or into a new hot-bed, giving shade till they become new-rooted; afterwards managing them as tender annual plants, being careful not to draw them up weak: about the middle of summer they may be taken up with balls to their roots, and be planted in a warm sheltered border, being protected and watered till re-rooted, little care being after- wards necessary: these produce seeds often in the autumn; but in the flower they may frequently be preferred over the winter.

They produce variety in flower and greenhouse collec- tions, and sometimes in the borders during the summer sea- son, especially the first sort by its orange flowers.

VERBIAGE, in Grammar and Rhetoric. See Ver- sobity.

VERBICÆ, in Ancient Geography, a people of Africa, in Mauritania Tingitana.

VERBIEST, FERDINAND, in Biography, a celebrated missionary, was born in Flanders, and attained distinction as a mathematician in China about the beginning of the 17th century. He was appointed by the emperor Cam-Hi pre-ident in the tribunal of mathematics, and entrusted with the care of the Calendar. He also obtained permission to preach.
preach the Christian religion in China, and made many efforts for inducing the emperor to embrace the Christian faith; but though Verbiest succeeded in prevailing with him to acknowledge his belief in one God, he failed in his attempts to convert him to Christianity. Such, however, was the respect which the emperor entertained for this missionary, that on occasion of his death, in 1688, he composed an elegy upon him, and ordered him to be interred with Christian honours. The principal work of Verbiest is entitled, "Astronomia Europaea, sub Imperatore Tartaro-Sinico Cam-Hi, ex umbra in lucem revocata a P. Ferdinando Verbiest, Flandro-Belga, e S. J. Academice Astronomico in Regia Pequeniana Praefecto," Diligente, 1687, 140. He also caused to be constructed, at the request of the emperor, a variety of astronomical instruments, and wrote sixteen volumes, in the Chinese language, on their construction and use. Verbiest contrived likewise to convey over a long bridge, by means of pulleys, several immense blocks of stone for building a mausoleum for the emperor, which, it is said, 500 horses could not have drawn, and extended an aqueduct several furlongs over a wide plain. He moreover caused upwards of 130 pieces of brass cannon for the use of the Chinese government, and calculated astronomical tables with eclipses of the sun and moon for 2000 years. Montuelia Hilt. des Mathem. Gen. Biog.

VERBINUM, in Ancient Geography, a town of Belgic Gaul, belonging to the Veromandui, upon the route from Bagaicum Nerviorum to Druritortum, between Buronum and Catuacum. Anton. Itin.

VERBO, in Geography, a town of Hungary; 16 miles N.W. of Leopoldiisad.

VERBOASIA, a town of European Turkey, in Bosnia; 15 miles W.N.W. of Bonaera.

VERBOSITY, in Rhetoric, an offence against energetic and vivid brevity or conciseness in writing. This differs from pleonasm; as in the latter, words are used which make no addition to the sense, whereas in the verbose manner, not only single words, but whole clauses, may have a meaning; but it would be better to omit them, because their meaning is unimportant; and therefore, instead of enlivening the expression, they make it languid. Another difference is, that in a proper pleonasm, a complete correction is always made by expunging; but this will not always answer the purpose in the verbose style, as it is often necessary to alter as well as to raze. Moreover, verbosity does not mean the same thing which the French express by the term "verbiage," which is commonly understood to denote a parade of fine words, plastically strung together, so as either to conceal a total want of meaning, or to disguise something weak and inconclusive in the reasoning. The former, or verbality, is merely an offence against vivacity; but the latter is more properly a transgression of the laws of perspicuity. One instance of a faulty exuberance of words is the immoderate use of circumlocation. In some circumstances, circumlocation is a beauty, in others it is a blemish. It is often used for the sake of variety; sometimes for the sake of decency; at other times, propriety requires the use of circumlocution, as when Milton says of Satan, who had been thrown down headlong into hell,

"Nine times the space that measures day and night To mortal man, he with his horrid crew Lay vanquish'd rolling in the fiery gulf."

In this case, "nine days and nights" would not have been proper, when speaking of a period before the creation of the sun, and consequentely before time was portioned out to any being in that manner. Sometimes even the vivacity of the expression may be augmented by a paraphrase, as when it is made to supply the place of a separata sentence. An instance to this purpose occurs in the words of Abraham, (Gen. xvii. 5.) "Shall not the judge of all the earth do right?" This circumlocation for God serves as an argument in support of the sentiment, and conveys more to conciseness. Such also is the paraphrase employed by Cicero, who, instead of saying simply, Milo's domestics killed Clodius, says, "they did that which every master would have his servants to do in such an exigence."

Another source of languor in the style is the insertion of such clauses, as to a superficial view appear to suggest something which heightens, but on reflection are found to presuppose something which abates the vigour of the sentiment. Such is the following sentence from Swift: "Neither is any condition of life more honourable in the sight of God than another, otherwise he would be a respecter of persons, which he affures us he is not." The last clause enervates the thought, as it too plainly implies, that without this assurance from God himself, we should naturally conclude him to be of a character very different from that here given him by the preacher. Akin to this is the juvenile method of loading every proposition with affectations. Such a practice in conversation tends to suggest a fupposition of the speaker's veracity, rather than to engage the belief of the hearer; and it has a somewhat similar effect in writing. Thus in our translation of Gen. ii. 17. God is represented as saying to Adam, concerning the fruit of the tree of knowledge, "In the day thou eatest thereof, thou shalt surelie die." The adverb surely, instead of enforcing, enfeebles the denunciation. Another example, somewhat similar, is the manner in which our interpreters have attempted, in the New Testament, to strengthen the negative, wherever the double negative (ς μη) occurs in the Greek, even in the most authoritative threatenings, by rendering it sometimes in no cafe, sometimes in no wise; neither of which phrases express more than the single adverb not; and as they partake of the nature of circumlocation, they in effect dilute the expression. Another cause of a languid verbo is the loading of the style with epithets. Epithets used sparingly, and with judgment, serve to enliven the expression; but a profusion of them has an opposite tendency. Besides, they lengthen the sentence, without adding proportional strength. We may also add, that the crowding of epithets into a discourse betrays a violent effort to say something extraordinary; and nothing is a clearer evidence of weakness than such an effort, without a correspondent effect.

There is, however, one kind of composition, the paraphrase, of the style of which verbosity is the proper character; because it is the professed design of the paraphrase to say in many words what his text expresses in few. Another species of verbosity is a prolixity in narration, arising from the mention of unnecessary circumstances. Campbell's Philosophy of Rhetoric, vol. ii.

VERBOVETZ, in Geography, a town of Croatia, at the confluence of the Cernets and Glocavia; 7 miles N.E. of Ivanitz.

VERBO AAS, a river of Denmark, in North Jutland, which runs into the sea, 6 miles W.N.W. of Holring.

VERBROECK, a town of Flanders; 8 miles E.S.E. of Hullt.

VERCEL, a town of Flanders, in the department of the Doubs; 11 miles N.E. of Ornans.

VERCELLAE, in Ancient Geography, a town of Italy, in Gallia Transpadana, and the capital of the people called Sebells. It had within its territory a temple and a wood consecrated
consecrated to Apollo. Here the Cimbri were defeated by the Romans, under Marius and Catullus. After the decline of the Roman empire, it became a republic, and from that state it fell under the dukes of Milan; and, lastly, it was given as a marriage portion to Amadeus III., duke of Savoy. See VERCELLI.

VERCELLI, or Vercellin, in Geography, a town of Piedmont, and, under the French dynasty, the capital of the department of Sofia; which fee. It is situated at the junction of the Cerva with the Sofia, and was anciently called Vercellae. It is the fee of a bishop, suffragan of the archbishop of Milan. There are two churches which are called cathedral, and twelve others, two abbeys, nineteen convents of both sexes, three provostships, two priories, three poor-houses, and five hospitals; the inhabitants are about 25,000. In 1800, the French took Vercelli from the Austrians, with considerable stores; 30 miles S.W. of Milan. N. lat. 45° 22'. E. long. 8° 26'.

VERCHATURSKY GORY, mountains which divide European and Asiatic Russia, extending almost north and south to a great length, and about 40 miles in breadth. They are covered with wood, firs, larch, birch, &c.

VERCHEN, a town of Anterior Pomerania; 6 miles S.W. of Demmin.

VERCHES, LES, a town of France, in the department of the Mayne and Loire; 10 miles S.W. of Saumur.

VERCHIERE, a town of Canada, on the right bank of the St. Lawrence. N. lat. 45° 47'. W. long. 73° 9'.

VERCHODVESK, a town of Russia, in the government of Viatka; 40 miles N. of Viatka.

VERCHOIANSKII, an offshoot of Russia, in the government of Irkutsk, on the Yana. N. lat. 65° 40'. E. long. 130° 14'.

VERCHOKIZLOSK, a fort of Russia, in the government of Upha, at the union of the Kizil and Ural; 40 miles S. of Verchnouralsk.

VERCHOLENSK, a town of Russia, in the government of Irkutsk, on the Lena; 120 miles N. of Irkutsk. N. lat. 54°. E. long. 105° 34'.

VERCHOTOMSKII, a town of Russia, in the government of Kollan; 32 miles N.N.W. of Mungatzkoi.

VERCHOTURA, a town of Russia, in the province of Ekaterinburg, near the river Tura. This was the first town which the Russians built in Siberia. It has four churches and two convents, besides chapels; and is the seat of a bishop. Verchotura is situated on a rising ground, and fortified with palisadoes and a ditch, and defended by a garrison under a commandant. The adjacent country is inhabited by a people called Vogulitz, who live on fruits in the woods, and on fish and deer. The soil is fertile, and agriculture is carried on. In the beginning of the 18th century, they were many of them converted to Christianity, and now mix probably with the rest of the people; 120 miles N. of Ekaterinburg. N. lat. 58° 45'. E. long. 60° 14'.

VERCHOVAGSKII, a town of Russia, in the government of Vologda, on the Vaga; 48 miles S. of Vielik.

VERCHOURALSK, a town of Russia, in the government of Upha, on the Ural; 120 miles S.E. of Upha. N. lat. 53° 36'. E. long. 59° 14'.

VERD, or VERDE, Cape, a cape on the west coast of Africa. N. lat. 14° 48'. W. long. 17° 31'.

VERD, or Verde Islands, Cape, islands of Africa, in the Atlantic, deriving their name from the cape opposite to which they are situated, and discovered by the Portuguese in 1446. They are so called, as some fay, from a green plant, called Sargofio, resembling water-cress, and bearing fruit like a gooseberry, which is found floating near them, and in such abundance as to impede the progress of vessels in their course. They are usually reckoned ten in number, and including rocks, they amount to fourteen. The two largest are St. Jago or Yago in the south-east and St. Anthony in the north-west. Four of these islands are situated towards the east, viz. Santiago, Mayo, Bonavista, and Salt isle; four towards the north-west, viz. St. Nicholas, St. Lucia, St. Vincent, and St. Anthony; and two are somewhat detached towards the south, viz. Brava and Fuego. (See each island respectively.) These islands are generally mountainous; some of them are barren and uninhabited; others are productive of rice, bananas, oranges, cotton, and sugar; and it is said the goats produce thrice a year, and the vines twice; they abound with poultry and rabbits, and turtles are plentiful on the shores. The air is hot and infaludious, rain being very rare; but a north-east breeze commonly rises before four in the afternoon. The manufacture of leather and felt confitute the chief riches. Many of them have been furnished by their proprietors with cows, goats, hogs, assles, mules, &c. These islands are situate about 390 miles W. of Cape Verd, and between 15° and 18° of N. lat.

VERDACHELON, a town of Hindoostan, in the Carnatic; 20 miles S.W. of Trivady.

VERDAPETTY, a town of Hindoostan, in the province of Mysore; 22 miles S. of Madura.

VERDE, Cape, a mountainous cape on the coast of Peru. S. lat. 6° 25'.—Alfo, a cape on the coast of Gaoa. N. lat. 43° 50'. E. long. 7° 50'.

VERDE, or Green Island, an island on the north coast of South America, at the mouth of the river S. Martha.

VERDE Island, or Verde Key, one of the small Bahamas. N. lat. 22° 54'. W. long. 75° 26'.

VERDEGREASE, VERDIGREASE, VERDIGRIS, or VERDIGRIS, a kind of rust of copper, formed from the corrosion of copper by a fermented vegetable, and into a bluish-green substance, of great use among painters for a green colour. The word is formed from the Latin, viride avis, it is also called arago. Others call it the flowe, and others the vitrific salt of copper; though, in reality, it is rather the proper substance of the metal.

The greatest quantities of verdigris have been manufactured at Montpellier, the wines of Languedoc being very proper for this preparation; and it has been exported thence in cakes, each weighing about twenty-five pounds. The following process for making it is described by M. Monet, of the Royal Society of Montpellier, and is published in the Memoirs of the Academy for the years 1750, and 1753. Vine-alks, well dried in the sun, are steeped during eight days in strong wine, and afterwards drained. They are then put into earthen pots, and wine is poured upon them; the pots are carefully covered; the wine undergoes the acetous fermentation, which in summer is finished in seven or eight days, but requires longer time in winter, although the operation is always performed in cellars. When the fermentation is sufficiently advanced, which may be known by observing the surface of the liquid of the pots, which during the process of the fermentation is continually wetted by the moisture of the rising vapours, the flasks are then to be taken out of the pots: these flasks are by this method impregnated with the acid of the wine, and the remaining liquor is but a very weak vinegar. The flasks are to be drained during some time in tanks, and layers of them are to be put into earthen pots with plates of Swedish copper, so disposed, that each plate shall rest upon and be covered with layers of flaks. The pots are to be covered with lids, and
and the copper is thus exposed to the action of the vinegar, during three or four days, or more; in which time the plates become covered with verdigris. The plates are then to be taken out of the pots, and left in the cellar three or four days; at the end of which time they are to be moistened with water, or with the weak vinegar above-mentioned, and left to dry. When this moistening and drying of the plates have been three repeated, the verdigris will be found to have considerably increased in quantity, and it may be then scraped off for sale.

A solution or eration of copper, and consequently a verdigris, may be prepared by employing ordinary vinegar instead of wine, as directed in the above process. But it will not have the unctuity of ordinary verdigris, which is necessary in painting. Good verdigris must be prepared by means of a vinous acid or solvent, half acid and half spirituous. Accordingly, the success of the operation depends chiefly on the degree of fermentation to which the wine employed has been carried; for this fermentation must not have been so far advanced, that no sensibly vinous or spirituous part remained in the liquor. Macquer’s Dict. Chem. See the processes as described by Chaptal, under the article Copper.

The Society of Arts, &c. offered a premium in 1756 for the making of verdigris in England; and in 1760 intimated, that it might be made by moistening with the cheapest and worst sort of cyder, the marc or remains of apples, pears, gooseberries, currants, floces, crabs, blackberries, or any fruits deprived of their juice by expression, proceeding afterwards by the processes above described. The premiums offered by the Society were several times claimed and allowed; and it was resolved, in 1763, that verdigris actually made of British materials, and submitted to various trials, was even superior to the foreign. Accordingly, a considerable manufactory was established, and successfully carried on for the purpose of making verdigris.

The good effects of verdigris is judged of from the deepness and brightnes of its colour, its dryness, and its forming, when rubbed on the hand with a little water or salve, smooth pale, free from grittines. This concrete is partially diffusible in water and rectified spirit, and almost totally in vinegar; from the acetic solution, well saturated, and left to exhale slowly in a warm air, the greatest part of the verdigris may be recovered in a crystalline form, called distilled verdigris. See Crystals of Venus, and Copper.

The crystals, distilled with a suitable fire, in a retort or other like vessel, give over the acetic acid in a highly concentrated state, but somewhat altered by the process. See Acetic Acid.

The matter which distilled vinegar leaves undissoled, on being mixed with some borax and linseed oil, and fixed in a crucible, yields a brittle metallic substance, of a whitish colour, not unlike bell-metal. Neum. Chem. by Lewis, p. 64, n. 4.

Verdigris is employed externally for deterring foul ulcers, and as an elapharotic; but it is seldom used, though milder than the sulphate or blue vitriol. It is employed as a collyrium in chronic ophthalmia. Hoffman recommends it particularly for destroying the calculi of old sitzun; tents of powdered verdigris, made up with salva, or other liquids, not fat or oily, conlume, he says, the harden callus in three or four days, so as to render it completely separable.

A detergent ointment, called mel egyptiacum, is prepared by boiling five parts of verdigris in fine powder with sixteen of honey, and seven of vinegar, till reduced to a clear consistence. The thinner matter which floats on the top of this mixture, after standing some time, is generally used, unless it be required more acid; in which case, the thick part which has subfided is thrown up among it.

In the Edinburgh dispensatory, an ointment, called unguentum ex ering, has been directed, composed of white wax and resin, each two ounces, olive oil one pint, and verdigris half an ounce. When these kinds of applications are employed for venereal or other ulcers in the mouth or tonsils, great caution is necessary, lest they should pass into the system; in which case, dangerous and even fatal consequences may ensue.

Verdigris is rarely or never given internally. It has been reckoned tonic, and administered with this view in a dose under gr. 3. Some recommend it, in the dose of a grain or two, as an emetic, which produces almost instantaneous effect, where poisonous substanies have been taken, for the immediate rejection of them. But warm water, milk, and oils, are much less dangerous, and more proper. In too large doses, it quickly proves fatal; and, on digestion, the coats of the stomach appear much thickened, and of a green colour. Lewis’s Mat. Med.

M. Navier has lately evinced the salutar effects of liver of sulphur, and particularly of liver of sulphur of Mars, as an antidote against the poison of verdigris.

Verdigris makes a blue-green colour in paint; but is generally used in yellow, which, by a proper mixture, renders it a true green. It is bright when good; but soon flies, when used in oil. When dissolved in vinegar, it is used in water painting, and is more durable; it may be also dissolved in the juice of rue, and thus produces a fine full green colour, equally fit for washing with that dissolved in vinegar.

Verdigris, with a decoction of logwood, strikes a deep black, which, when diluted, becomes a fine blue. See Dyeing.

VERDELLO, in Natural History, the name of a green marble used in Italy as a touchstone, for the trying of gold, &c.

VERDEN, in Geography, a town of Germany, and capital of a principality of the same name, on the Aller, which divides itself here into two branches, the smaller of which lies near the town, and is at present only frequented by the ships going up and down the Aller. In the town are four churches and a Latin school; 56 miles S.S.W. of Hamburg. N. lat. 52° 58'. E. long. 9° 15'.

Verden, a principality of Germany, bounded on the north and west by the duchy of Bremen, and on the east and south by the duchy of Lunenburg; about twenty-four miles in length, and nearly as much in breadth. This principality confits for the most part of heath and dry land, as also of forests; but on the rivers Wefer and Aller is good marsh-land. The Aller waters almost all the southerly; but the Wefer a part only of the westerly boundaries of the country. Verden was formerly a bishopric, founded by Charlemagne. At the peace of Wolfsbidad, in the year 1648, the crown of Sweden obtained the bishopric as a duchy. In 1712, the Danes invading the duchy of Bremen, the inhabitants of Brunswick-Lunenburg possessed themselves of it. In 1715, by virtue of the alliance concluded at Wismar, it was ceded, together with Bremen, by the king of Denmark, to the electoral house of Brunswick-Lunenburg; such cession being also made again, in the year 1719, by the crown of Sweden. This duchy has the same regency with the duchy of Bremen. The inhabitants are Lutherans.

VERDERER, or VERDERO, formed from viridarius, which Ulpian used in the like signification, a judicial officer.
VERDICT, Attainder by. See ATTAINDER.

VERDICT, False. See ATTAIN.

VERDIER, ANTONY DU, in Biography, lord of Vau-privas, was born at Montbrison in Forez in the year 1544, and distinguished himself not only by his writings, but by encouraging literature, for which purpose he granted to men of letters the use of his well-furnished library. He was advanced to the office of historiographer of France, and having occupied the rank of gentleman in ordinary to the king, died in the year 1600. Of his numerous writings, the only work that has been noticed by posterity is his "Bibliothèque des Autors François." It was first printed at Lyons in 1585, fol. and again published, under the title of "Bibliothèque de la Croix du Maine," by De Juvigni at Paris, in 5 vols. 4to. 1772-3, with notes and corrections.

VERDIER, CLAUDE DU, the son of Antony, though a man of learning, gained little reputation by his Latin and French publications. Having mismanaged a good estate transmitted to him from his father, he lost the latter part of his life in obscurity, and died in 1649, aged above 80. Moreri.

VERDISTAN, CAPE, in Geography. (See Cape Bar-
distan.) This cape is a land-mark which ships generally look out for in their passage up the Peruvian gulf. There is a dangerous shoal, which extends a considerable way to sea, and those are fortunate who pass by this place without meeting with a gale of wind. Here they manufacture an excellent kind of cloth, which is much worn by the Arabs. On this coast lies Congon or Kungoon, a large and populous town, which carries on a considerable trade with the gulf, and also with the inland country. The Portuguese had once a considerable settlement here. Between this and Tahire or Tahirea there is another town of some note, called Toombuch, and also the villages of Shilee (Sheeloo), Burg, and Yrist.

VERDITER, VERDITER, a kind of mineral substance sometimes used by the painters, &c. for a blue, but more usually mixed with a yellow for a green colour. See TERRE-VERTE.

Verdier, according to Savary, ought to be made of the lapis Armeonis; or, at least, of an earthy substance much like it, brought from the mountains of Hungary, &c. only prepared by powdering it, and cleaning it by lotusa.

But this stone and earth are very rare; and the verdier used is not a native, but a factitious substance, or blue pigment, obtained by adding chalk or whiting to the solution of copper in aquafortis. (See COPPER.) It is prepared by rosiners of silver, who employ for this purpose the solution of copper, which they obtain in the processes of paring; by precipitating silver from aquafortis with plates of copper. It is said, that a fine-coloured verdier cannot be obtained from a solution of copper prepared by dissolving directly that metal in aquafortis; and that the silver is necessary. According to Dr. Merer's account of the method of preparing it, a quantity of whiting is put into a tub, the copper solution poured on it, and the mixture stirred every day for some hours together, till the liquor loses its colour. The liquor is then poured off, and more of the solution of
of copper added; and this is to be repeated till the matter appears of the proper colour; after which it is spread on large pieces of chalk, and laid in the sun to dry. Boyle observes, that the procés often miscarried, and that heating the liquor, before it is poured on the whiting, has been found to contribute to its success. It is still, however, Dr. Lewis says, very apt to fail in the hands of the most skillful workmen; the preparation, instead of a fine blue, turning out of a dirty green.

From the liquor poured off in making verditer, Mr. Boyle says (Works Abr. vol. i. p. 169.), that the refiners obtain, by boiling, a kind of falfepetre, fit with the addition of vitriol to yield them a new aquafortis. Some have said that a deeper and brighter kind of verditer may be made by using a filtered solution of pearl-ashes instead of the chalk, in the above process.

Verditer, when good, is a cool full blue, but without the leafy transparency either in oil or water. In oil it is subject to turn greenish, and sometimes black; and in water it is not always found to hold. It is chiefly used for paper-hangings and coarce work, and in varnish.

**VERDON, or FORDON, in Geography, a town of Pfuf- fian Pomerelia; 60 miles S. of Dantzig.**

**VERDONE, a river of France, which runs into the Durance, at Pertuis, in the department of the Mouths of the Rhône.**

**VERDONE, in Ichthyology, the name of a fish of the turdus or wraffe kind, called by some authors turdus viridis minor. See Turdus and Laenus.**

It is of a fine green colour in all parts of its body; the back, sides, and belly, have all plainly the same colour; but in different degrees: the back being of the deepest dye; the belly has something of yellowness with the green, and the sides are variegated with lines of a fine blue. It has only one long fin on the back, which has thirty rays or ribs, the eighteen foremost of which are rigid and prickly, the others soft and flexible. It is caught in the Mediterranean, and sold in the markets in Italy. Salvian de Aquat. p. 88.

**VERDOY, in Heraldry, is applied to a bordure of a coat of arms, charged with any kind or parts of flowers, fruits, feeds, plants, &c. Of these there are eight in number.**

**VERDUN, in Geography, a town of France, and principal place of a district, in the department of the Meuse. Before the revolution the capital of a province, called Verdunia, and the see of a bishop, suffragan of Toul. It is large, populous, and consists of three parts, the Upper, Lower, and New Town. Exclusive of its fortifications, this place is farther defended by a fine citadel. The bishop, before the city and district were annexed to the crown of France, was a prince of the empire, and afterwards styled himself such, as also earl of Verdun. Exclusive of the cathedral in this city, are one collegiate and nine parish churches, six abbey, and one college. Verdun was formerly an imperial city; 33 miles N.W. of Toul. N. lat. 49° 9'. E. long. 5° 27'.—Alfo, a town of Spain, in Aragon; 15 miles W. of Jaca.—Alfo, a town of France, in the department of the Aude; 6 miles N.E. of Calet- naudary.**

**VERDUN-sur-Garonne, a town of France, in the department of the Upper Garonne; 12 miles S.S.E. of Castel- Saran.**

**VERDUN-sur-Saône, a town of France, in the department of the Saône and Loire, situated at the confluence of the Saône and the Doubs; 9 miles N.E. of Châlons-sur-Saône. N. lat. 46° 54'. E. long. 5° 7'.**

**VERDURE, the quality of greenness. The word is French, formed of verd, green.**

**VERE, Sir Francis, in Biography, an English officer in the reign of queen Elizabeth, was a defencdant from a branch of the De Veres, earls of Oxford, and born in 1554. Being lent with a body of troops, under the command of the earl of Leicester, to the affiance of the United Provinces in 1587, he distingufihed himself firel in the defence of Sluys, and in 1588 at Bergen-op-Zoom by refifting the arms of the duke of Parma. For his services on this occasion he obtained the honour of knighthood, and was employed on many subsequent occasions, in which he gained fiigid reputation, in which he was at length entrusted with the command of the English forces serving with the States. When these forces were withdrawn in the year 1592, Sir F. Vere was chosen representative for the borough of Leominister. In 1596 he successfully executed a commission with which he was entrusted to the States, and on his return obtained the command of a ship, with the rank of vice-admiral. In the expedition against Cadiz, he acquitted himself with skill and courage, and was principally instrumental in the capture of the town. On his return from an expedition with the earl of Eflifex to the Azores, he was appointed governor of Brill, one of the towns allotted to queen Elizabeth as security for money advanced to the States. At the battle of Nieuport, in 1600, his conduct, and the valor of the English whom he commanded, contributed very essentially to the success of the day, though the loss of lives was considerable, and Vere himself received a wound, which he concealed till victory was secured. The States, duly apprized of his merit, appointed him, in 1601, governor of Ofsend, which was besieged by a powerful army under the command of archduke Albert. By means of artifices which some have thought incompatible with the character of a generous soldier, he prolonged the siege, and deferred a surrender by negotiation, till he obtained a re-inforcement of troops, and then informed Albert that the treaty was at an end. The prince was indignant, nor were the States pleased with the fraud. This circumstance probably occasioned his resignation of the command at Ofsend; but being solicited by the States to procure fresh supplies of men from his own country, he succeeded in obtaining them. His government of the Brill, which expired with the death of Elizabeth, was renewed by James I.; but his peace with Spain in 1604 terminated the occupation of military men. Sir Francis was also governor of Portsmouth, and remained at home till his death, in 1608, the 54th year of his age. A splendid monument was erected to his memory in Westminster Abbey by his widow. His exploits have been recorded by himself, in a work entitled "The Commentaries of Sir Francis Vere, being dierfe Pieces of Service wherein he had Command, written by Himself in way of Commentary," published from his MSS. by William Dil- lingham, D.D. fol. Cambridge, 1657.**

**VERE, Horace, baron of Tilbury, younger brother of the preceding, whom he accompanied in many of his actions in the Low Countries, and distinguished himself on several occasions. He succeeded his brother in the government of Brill, and held it till the year 1616, when it was restored to the States. Although he was entrusted, in 1620, by king James with a tardy and scanty aid to his fon-in-law the king of Bohemia, he contributed for some time to preserve the Palatinate from being overrun by the Imperialists; and at last surrendered on honourable terms to Tilly at Münich. On the accession of Charles I. he was the first peer created by the king, under the title of lord Vere of Tilbury. Retaining the post of general of the forces in the
the service of the States-general, he was appointed master of the ordinance in 1629; but retired from public employment some short time before his death, which was occasioned in 1635, in the 70th year of his age, by an apoplectic fit. Lord Vere, no less skilful and brave than his brother as a commander, was of a milder and more modest temper. Biog. Brit.

VERE, in Geography, a river of England, in the county of Herts, which runs into the Coln, 2 miles S.E. of St. Albans.—Also, a county or parish on the south side of the island of Jamaica.

VERE, Cape, a cape on the W. coast of Calabria. N. lat. 39° 20'. E. long. 16° 10'.

VEREA, in Botany, for so it ought to be written, not Verica, was thus named by Mr. Andrews, in compliment to James Vere, esq. F.L.S. of K Pensford Gore, whose garden has long been celebrated among the richest, and best cultivated, in the neighbourhood of London.—Andr. Repof. t. 21. Wildl. v. 2. 471.—We regret that this memorial of our amiable and liberal friend cannot be preferred. This suppos'd genus is merely the Cotyledon, with four-cleft octandrous flowers, of which several are known, (see Cotyledon,) nor can they, on any found principle, be separated therefrom.

The Verica crenata is Cotyledon crenata, Venten. Malm. t. 49. Ait. Hort. Kew, v. 3. 110. Leaves crenating each other in pairs, ovate, obtuse, crenate, fleshy. Flowers four-cleft, erect, in cymose panicules.—Native of Sierra Leone; kept in the dry flove or tub-bed, where it flowers in summer and autumn. The stem is shrubby. Leaves green, large and handfome, very juicy. Flowers an inch long, yellow, with a green tube and orange mouth.

VERELIUS, Olof, in Biography, a Swedish antiquary and librarian in the academy of Upsal, was the son of a clergyman of East Gothland, where he was born in the year 1618. Having commenced his education in the gymnasium at Linkoeping, he pursued it for five years at the academy of Dorpt, and in 1638 removed to Upsal. Soon after he became tutor to some young Swedish gentlemen, whom he accompanied in their travels through various parts of Europe, and on his return in 1650, he was, by favour of the queen, appointed professor of eloquence at Dorpt in 1651, and in 1653 became treasurer of the academy of Upsal. In 1662 he was appointed professor of the antiquities of his native country, and in 1666 antiquary of the kingdom. He was in the same year nominated alderman in the college of antiquities, and died at Upsal in 1682. He was a good Latin scholar, and well skilled in Swedish antiquities, so that some of his countrymen honoured him with the appellation of "Parens Eloquentiae, et Filium Aradiaeum Antiquitatum Patriae." He was a zealous advocate for the ancient origin of the Swedes, inasmuch as to contend that the Goths who took Rome flied from Sweden, and to affect, "that those who deny their antiquity ought to have their brains knocked out with Runic stones." His dispute with professor Scheffer, concerning the former situation and name of the town and temple of Upsal, produced a number of publications. Among his other principal works are, "Gothisci et Rolfs, Vedfo-Gothico Regnum, Historia lingua antiqua Gothicia coniectura, quam & Manucripto vetuliflimo edidit, Verfione et Notis illantur," Upsal 1664, 4vo. and several publications relating to Gothic literature and Swedish history. Gen. Biog.

VERELLA, Cape, in Geography, a cape on the E. coast of Cochinchina. N. lat. 12° 35'. E. long. 109° 18'.

VERELLA, Cape, Palce, a cape on the S.E. coast of Cochinchina. N. lat. 11° 45'. E. long. 109° 4'.

VERELST, Simon, in Biography, was born at Antwerp
ment, in Addison county, on Otter creek, about six miles from its mouth in lake Champlain. It contains a congregational church and a gaol, and 835 inhabitants. In its vicinity are several mills; 115 miles N. of Bennington, and 519 from Washington.

VERGENTUM, in Ancient Geography, a town of Spain, in Bética.

VERGER DE HAURANE, JOHN DU, abbot of St. Cyran, in Biography, was the descendant of a noble family, and born at Bayonne in 1581. After having enjoyed some inferior preferments he removed to Paris, and in 1620 became abbot of St. Cyran. He was distinguished as a zealous defender and propagator of Jansenism; and under this character gained a great number of partisans. But being suspected of holding several erroneous doctrines, and of contumely of the church, he was denounced as a dangerous person to cardinal Richelieu, who caused him to be imprisoned at Vincennes in 1638, in which state of confinement he remained till the death of the cardinal; and soon after his liberation, he died at Paris in 1643, aged sixty-two.

As a champion in the cause of the Jansenists against the Jesuits, the abbot wrote several works, which were evidences of his zeal and diligence rather than of his judgment and ability. Although these works were held at the time of their publication in high estimation, they are now forgotten, as well as the controversy that occasioned most of them; and it is therefore needless to enumerate them. Moreri.

VERGERIO, Pier-Paolo, the elder, a reviver of literature, was born about the year 1549 at Jaffinopolis, now Capo d'Itria. Having studied at Padua and Florence, he passed some years in different towns of Italy, particularly at Padua, where he officiated as professor of dialectics; and he studied Greek at Venice, under the celebrated Emanuel Chrysoloras. At Padua he took the degree of doctor of laws in 1504, till which mature period of his life his condition bordered on that of indigence. From Padua, where he was attached to the interests of the princes of Carrara, he removed to Venice, and afterwards accompanied his friend Zabarella, when he became cardinal, to the council of Conclave. Having left this patron in 1417, he is said to have sunk into a state of mental derangement, and to have died in Hungary, about the time of the council of Basil, which commenced in 1431. His works caused him to be ranked among the most successful cultivators of literature at that period. His "History of the Princes of the House of Carrara, from its Origin to the Year 1535," composed in Latin that was deemed elegant in that age, has been published in Muratori's Collection of Italian Historians. His treatise "De ingenuis Moribus et liberalibus Adolectcentiis fluidis," addressed to one of the princes of Carrara, was very popular at the time of its publication. He also wrote "A Life of Petrarch," published in the "Petrarcha Redivivus" of Tommassini, and an eulogy of St. Jerome; and he left several manuscripts. Moreri.

Vergerio, Pier-Paolo, the younger, one of the few prelates converted from popery, belonging to the same family with the subject of the preceding article, was born about the beginning of the 16th century at Capo d'Itria; and having studied law at Padua, and graduated, he became, in 1522, professor of the notary's art in that university. At Padua and at Venice he maintained the character of an able orator, as well as that of a man of good morals. The charges brought against him by an enemy, and particularly that of poisoning his wife, have been sufficiently refuted. From Venice, where he resided in 1530, he went to Rome, and being introduced to pope Clement VII., was sent by him as nuncio to Ferdinand, king of the Romans, pro-

probably about the close of the year 1532. On this occasion he used all his efforts in support of the papal fee, and for the purpose of restraining the progress of Lutheranism. Paul III. recalled him from this embassy, but afterwards deputed him on the fame mission, which gave him an opportunity of holding several conferences with Protestant princes, and of an interview with Luther himself at Wittenberg. In 1536 he was sent by the same pope to Charles V. in Naples, and for his services to the church he was made a bishop of his native city. From thence he returned to Germany, and was one of the commissioners who drew up the indictment of the council. At the close of the year 1540 he attended the conference at Worms, as a deputy from the king of France. However, before this time he was suspected by the court of Rome of a secret attachment to Lutheranism, but he still contrived to keep up appearances. Upon his subsequent retirement to his diocese, whilst, as it is said, he was preparing a confusion of the German Separatists, he became convinced that they were right; and having communicated his sentiments to his brother, bishop of Pola, he adopted the same opinions; and they both resolved to propagate them in their respective dioceses. The monks were alarmed, and reported them to the inquisition. Vergerio, after having in vain fought an asylum, determined in 1546 to justify himself before the council of Trent. The council referred his cause to the nuncio and patriarch of Venice. But the consideration of it being procrastinated to the year 1548, he was ordered not to return to his church; and he soon after withdrew to the country of the Grifons, where, as well as in the Valteline, he for some years exercised his ministry. His brother died before he left Italy. The younger Vergerio, having received an invitation to Tubingen from the duke of Wirtemberg, died there in 1565. His works, written in the Italian language, were numerous; and their principal object was to expose the impostures and absurdities of popery. Its advocates were of course much incensed, and circulated against the author many malignant, and probably unfounded, reports. Some Protestant writers have represented him as unfeudal, and little acquainted with theological subjects. Bayle.

VERGERS, Virogateores, Servientes, are officers who carry white wands before the justices of either bench; called also, porters of the verge.

Vergers of cathedral or collegiate Churches, are inferior officers, who go before the bishop, dean, &c. with a verge, or rod tipped with silver.

VERGES, in Geography, a town of Spain, in Catalonia; 10 miles E. of Gerona.

Vergier, James, in Biography, a French poet, was born at Lyons in 1657, and educated at Paris with a view to the ecclesiastical profession; but he soon laid aside the clerical habit and became a man of the world. He recommended himself to those whose society he frequented by his gaiety and polished manner, and in 1690 he obtained the post of secretary of marine, and afterwards that of president of the council of commerce at Dunkirk. But his love of pleasure, combined with idleness, prevented his acquiring the character of a man of business. His career of pleasure was terminated at Paris in 1720, by the piltol of a robber, at the age of 63. Rouille characterizes him as a philo-

sopher, formed for society, without any mixture of gall or malignity, and extols the noble and elegant simplicity of his convivial songs, which entitles him to the appellation of the French Anacreon. In his other productions, such as odes, madrigals, sonnets, epigrams, tales, fables, epistles, &c. it is acknowledged that his style is negligent, and occasionally profane. "Vergier," says Voltaire, "is with regard
VERGIL, in Geography, a mountain of Naples, in Laur; 7 miles E. of Nola.

VERGIVIUS OCEANUS, in Ancient Geography, a name given by Ptolemy to that part of the sea which bathed the southern coast of Hibernia, and the western provinces of the isle of Albion. It is now called St. George's channel and the Irish sea.

VERGNIE, LOUIS-ELISABETH DE LA, Comte de Trefson, in Biography, a French miscellaneous writer, was born of a noble family at Mans in 1705. Introduced at Paris, when young, to an acquaintance with Fontenelle, Voltaire, and others, he imbibed a taste for polite literature. But devoted also to military service in common with other persons of his rank, he attended Louis XIV. in the campaigns of Flanders, on occasion of the war in 1743, and became his aide-de-camp at the battle of Fontenoy. Having risen to the rank of lieutenant-general, he withdrew upon the peace to the court of Stanislao at Luneville, which he contributed to adorn and enliven by his agreeable and sprightly talents. The king's Jesuit-confessor, dreading his influence, accused him of the crime of philosophy. When Stanislao preferred this charge against him, he replied, "I request your majesty to recollect, that there were 3000 monks at the procession of the League, and not one philosopher." After the death of Stanislao, the count lived in solitude, and employed himself as an author. In his youth he had penned some epigrams, which are thought to have prevented his obtaining admission into the French academy till his 75th year, an honour of which he was ambitious, and which gratified him much, though he did not long live to enjoy it; for he died of the gout, to which he had been much addicted, in the year 1752, at the age of 77. His love and talent for poetry were retained to the close of life. Several of his works, which were numerous, are romances, or compositions of that clafs, either original or altered from tho' of other authors. A posthumous work of different character is entitled "An Essay on the Electric Fluid, considered as an Universal Agent," in 2 vols. 8vo. A collection of his works was published in 1731, in 12 vols. 8vo. Nouv. Dict. Hist.

VERGOBRETS, a name given to magistrate in certain provinces of Gaul, who were like the archons of Athens, but only with an annual power.

VERGORAZ, in Geography, a town of Dalmatia, situated at the foot of some mountains which separate the dominions of Venice (now Italy) from those of the grand signior. It was formerly rich and flourishing, but is now a poor place; 20 miles E. of Narenta.

VERGUENNI, in Ancient Geography, a people of the Maritime Alps, S. of the Veamini.

VERGUTTUM, in Geography, a town of Hindoostan; in the circle of Cicacco; 20 miles N.N.W. of Cicacco.

VERGY, a town of France, in the department of the Côte d'Or; 10 miles S.S.W. of Dijon.

VERHEYEN, PHILIP, in Biography, an eminent anatomist and physician, was born in 1648 at Vethrouck, in the country of Waes, and having been noticed by the rector of the parish, was instructed by him in the rudiments of Latin, and in his 24th year, sent to commence a course of classical education at Louvain. His diligence amply compensated for loss of time; and having assumed the clerical habit, he devoted himself to the study of theology. But his views were changed by an amputation of his leg, occasioned by an inflammation; and he substituted medical pursuits for those of divinity. These he followed at Louvain and Leyden, and taking his degrees at the former place, he there fixed his residence. In 1689 he was nominated professor of anatomy.

VERGILIO, in Biography, an Italian, was born at Urbino in the 16th century, and became first known to the learned by a Latin collection of proverbs, preceding that of Erasmus and the occasion of some bickering between them. It was first printed in 1498, and frequently republished. In the following year appeared his work "De Rerum Inventoribus," a very learned performance, but defitute of found criticism, and exhibiting many evidences of the credulity of the author. About the commencement of the following century, pope Alexander VI. deputed him to a commission to England, for the purpose of collecting the papal tribute called Peter-pence. As he was admired in this country for his learning and Latin stile, he was promoted to the archdeaconry of Wells, and engaged by Henry VII. to write a history of England. This work was begun in 1505, and printed at Basil in 1548, with a dedication to Henry VIII. Enjoying in this country the preemptions of prebend and archdeacon, he wished to continue in it, notwithstanding the changes of religion that had occurred, and the cessation of his office as collector of a tax that no longer subsisted; more especially as he evinced himself, by his approbation of the marriage of the clergy and his condonation of the worship of images, to be no strict Catholic. He had likewise introduced into his treatise "De Inventoribus," some passages in which the Inquisition expunged, and reflected on the pride of the clergy, by suggesting that St. Peter would not suffer Cornelius the centurion to kiss his feet. He ventured, however, in 1550, being in advanced life, to return to his own country for the benefit of a warmer climate. His English benefices were continued till his death, which happened at Urbino about the year 1555. Of his history of England, contained in twenty-six books, and extending to the reign of Henry VIII., it is sufficient to observe, that its style is clear and elegant, but that the matter of it has been censured by various writers. Sir Henry Savile says, that as Polydore was an Italian, little acquainted with public business, polliheing no great degree of genius or judgment, and for the most part taking falsehood instead of truth, he has left us a history full of errors, as well as poorly and jejuneley written. Our antiquaries also have severely treated him, on account of the contempt which he has expressed for the fables of Geoffrey of Monmouth, and other legendary narrations. He has been represented on the one hand as a columnist of our country and an enemy to its glory; whilst, on the other hand, the French and Scotch have accused him of partiality to England in those incantations with regard to which their translahtions have been blended with its history. Besides, it is said that he destroyed many MSS. with which he was intrusted, in order to prevent a detection of his errors; but Tiraboschi considers this as a tale which no man of sense can credit. By others it has been reported, that he sent off a whole ship-load of MSS. to Rome. Both these stories are defitive of proof. Polydore also published, in 1526, a book "De Prodigis," in which he strongly contends against the divinations of the ancients. Vossius. Tiraboschi. Nicollon's Hist. Lib. Gen. Biog. Vol. XXXVI.
VER

It has its name from a large sort of grape, called verjus, or bourdelas; which is said never to grow perfectly ripe; or rather, which in its utmost maturity is too auster and four to be used in wine; whence it is commonly turned into verjuice; though in France all unripe grapes are denominated verjus.

There is also tolerable verjuice made of crabs, gathered, and laid in an heap to sweat; the stalks, &c. separated; they are then stamped, or ground, and the crab mahl put in a hair bag; the juice squeezed in a press, then barrelled up close, and set in a warm place to work for ten or twelve days.

Verjuice made for sale shall pay the same duty as cyder or perry.

VERIXA, in Geography, a town of Asiatic Turkey, in the government of Moful; 15 miles N.W. of Naufs.

VERKENS VISCH, in Ichthyology, the Dutch name of a fish caught in the East Indies. It is about seven inches long, of a blackish-green colour, with fins and tail wholly black, and with yellow irises to the eyes. It is caught in fresh waters in the East Indies, and is a very delicate fish. It is very nearly related to the capricious, or goat-fish, if not the same species.

VERLUCIO, in Ancient Geography, a place of Britain, in the fourteenth route of Antonine, between Aquæ Solis or Bath, and Cunelio or Marlorough. It is placed by Dr. Gale at Welbury, and by Dr. Stukeley at Hedington; but Mr. Horfley, following the route of the military way from Bath to Marlborough, and the distances from both these places, thinks it more probable that it was situated near Leckham, or at Silverfield near Lacock, where great quantities of Roman money have been found.

VERMAND, in Geography, a town of France, in the department of the Aïnè. Before the revolution, the capital of a district in Picardy, called Vermelidois; 6 miles W. of St. Quentin.

VERMANTES, a town of France, in the department of the Indre and Loire; 6 miles N.W. of Bourgenil.

VERMANTON, a town of France, in the department of the Yonne; 12 miles N.W. of Avalon.

VERMANTREE, one of the smaller Shetland islands. N. lat. 60° 27'. W. long. 1° 55'.

VERMEJO, or RIO GRAND, a river of South America, which rises near Cabañido, in the province of Tucuman, and runs into the Parana, near its union with the Paraguay; opposite Corrientes.

VERMEJO. See BERNALDO.

VERMELHO, in Ichthyology, the name of an American fish, more usually known by the name of the pudiano.